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A | Biologie

West African species of *Caenis* ■ Phylogenetic affinities of Petaluridae ■ Revision of Australian *Sphictostethus* ■ New Staphylinidae from Iran ■ Amarygmini of Borneo ■ New species of *Anomala* from South East Asia ■ Checklist of fishes of New Caledonia

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The terrestrial isopods (Isopoda: Oniscidea) of Greece. 27th contribution: The genus *Armadillidium* (Armadillidiidae) on the Ionian islands[1]

Helmut Schmalfuss

Abstract

Based on the revision of the literature, the reinvestigation of type material and the investigation of new collections, 21 species of *Armadillidium* are reported from the Greek Ionian islands. Eleven species were treated in previous contributions of this series. The diagnostic characters of the ten remaining species are described and illustrated, mostly by SEM-photographs, and the Greek records of these species are mapped.

Keywords: Isopoda, Oniscidea, *Armadillidium*, Greece, Ionian islands.

Zusammenfassung

Die Untersuchung neuer Aufsammlungen, die Durchsicht der Literatur und die Nachuntersuchung von Typenmaterial ergaben 21 *Armadillidium*-Arten für die griechischen ionischen Inseln. Elf Arten wurden in vorangehenden Beiträgen dieser Serie behandelt. Die diagnostischen Merkmale der übrigen zehn Arten werden beschrieben und illustriert, meist mit Hilfe von REM-Aufnahmen, und die griechischen Nachweise dieser Arten werden kartiert.

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1 Introduction

In the first four parts of this new revision of the Greek species of *Armadillidium* (Schmalfuss 2006a, 2006b, 2008, 2010) the 43 species known from the Peloponnese, the Aegean islands and the northern mainland (provinces Thrace, Macedonia and Epirus) were treated. In the present fifth part the species from the Greek Ionian islands are dealt with (map Fig. 1). In contrast to the Peloponnese (five new species) and the provinces of Macedonia and Thrace (seven new species) the material investigated from the Ionian islands contained no new species. The Ionian islands,

[1] 26th contribution see Stuttgarter Beiträge zur Naturkunde A, Neue Serie 3: 1–31 (2010).

Fig. 1. Map of the Ionian islands. – The numbers indicate the political prefectures (nomoí) of the Ionian islands: 1 = Kérkira, 2 = Lefkáda, 3 = Kefalloniá, 4 = Zákinthos.

as well as the adjacent mainland province Epirus, have been intensively surveyed in the first half of the 20th century, and the collected isopod material has been published in numerous articles by VERHOEFF and STROUHAL (see references in the present paper and in SCHMALFUSS 2010). Including the species from the Ionian islands we arrive at 53 species of *Armadillidium* which have up to now been treated and described or redescribed from the mentioned parts of Greece. One more paper on the central Greek mainland is planned, from where, at the present state of knowledge, six more species are known. This adds up to 59 species of *Armadillidium* known from Greece.

Abbreviations

A.	*Armadillidium*
ex.	example(s), specimen(s)
NMW	Naturhistorisches Museum Wien (Vienna)
SMNS	Staatliches Museum für Naturkunde Stuttgart

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Dr. K. WOLF-SCHWENNINGER and S. LEIDENROTH (both SMNS) operated the scanning electron microscope, and J. REIBNITZ and Dr. H.-P. TSCHORSNIG (both SMNS) edited the SEM-photographs and the maps.

Dr. S. SFENTHOURAKIS (Pátra/Greece) and Dr. S. TAITI (Firenze/Italy) reviewed the present paper.

To all of them I wish to express my sincere thanks.

2 Methods

The material used for the SEM-preparations was, if not otherwise stated, air-dried. The mounted material was coated with a 20 nm Au/Pd layer and examined with an ISI-SS40 scanning electron microscope at 10 KV. Digital photographs were directly acquired by using DISS 5 (point electronic).

3 The genus *Armadillidium* on the Ionian islands

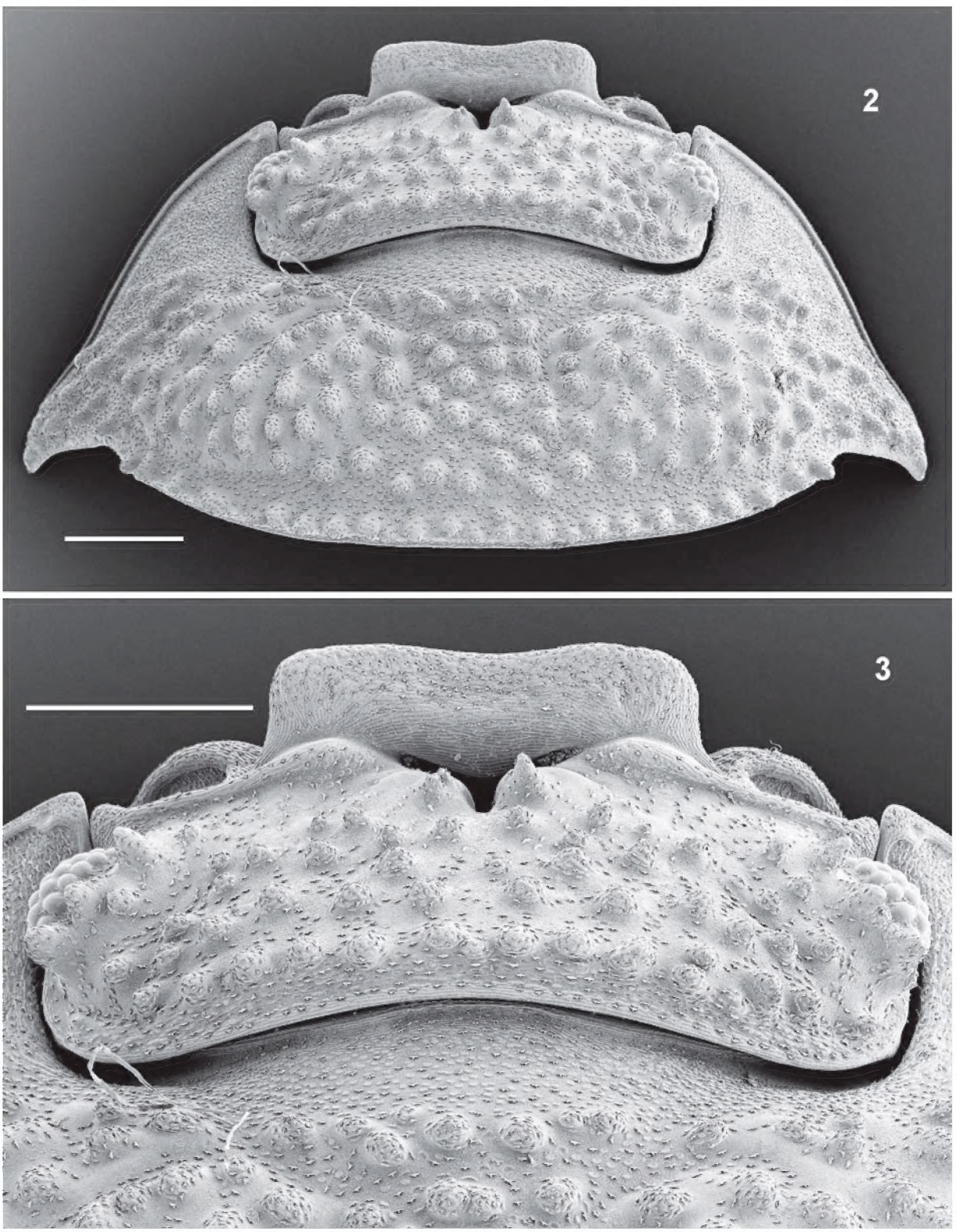
3.1 *Armadillidium albanicum* Verhoeff, 1901

This species was treated in the 26th contribution of this series (SCHMALFUSS 2010). It is known from southern Albania, the Greek island Kérkira and the northwestern Greek mainland.

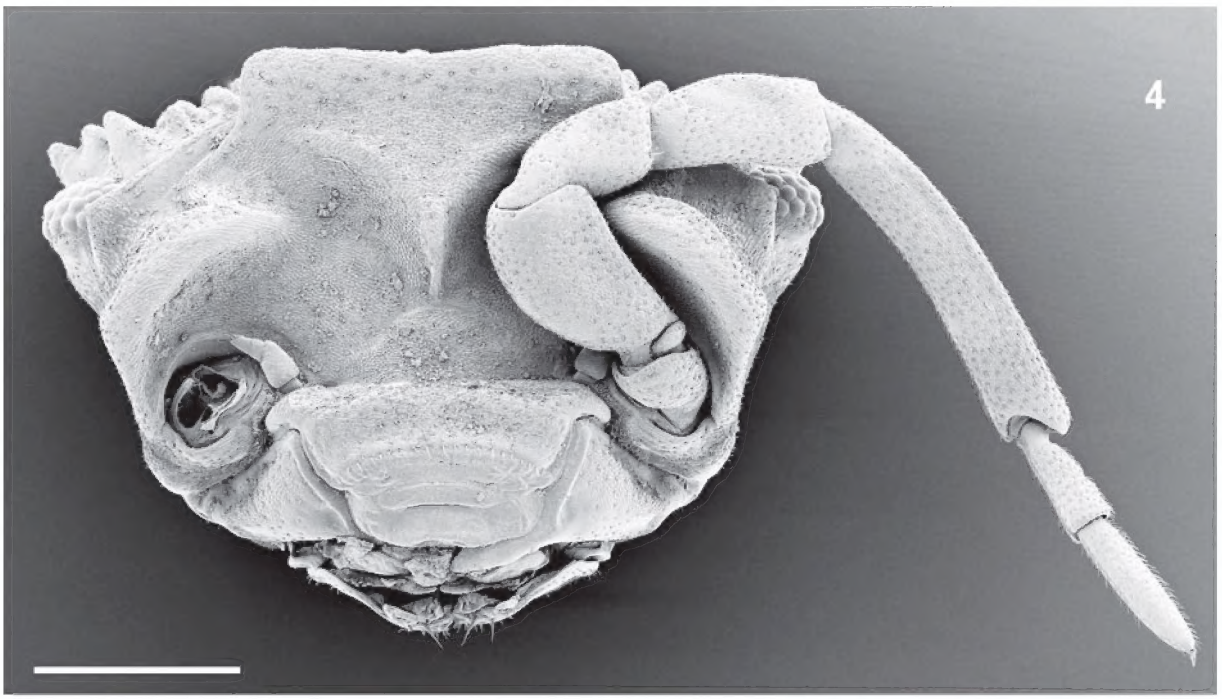
Possibly *A. albanicum* is conspecific with *A. klugii* Brandt, 1833. To clarify this question a detailed redescription of the type material of *A. klugii* is necessary, which is beyond the scope of the present publication.

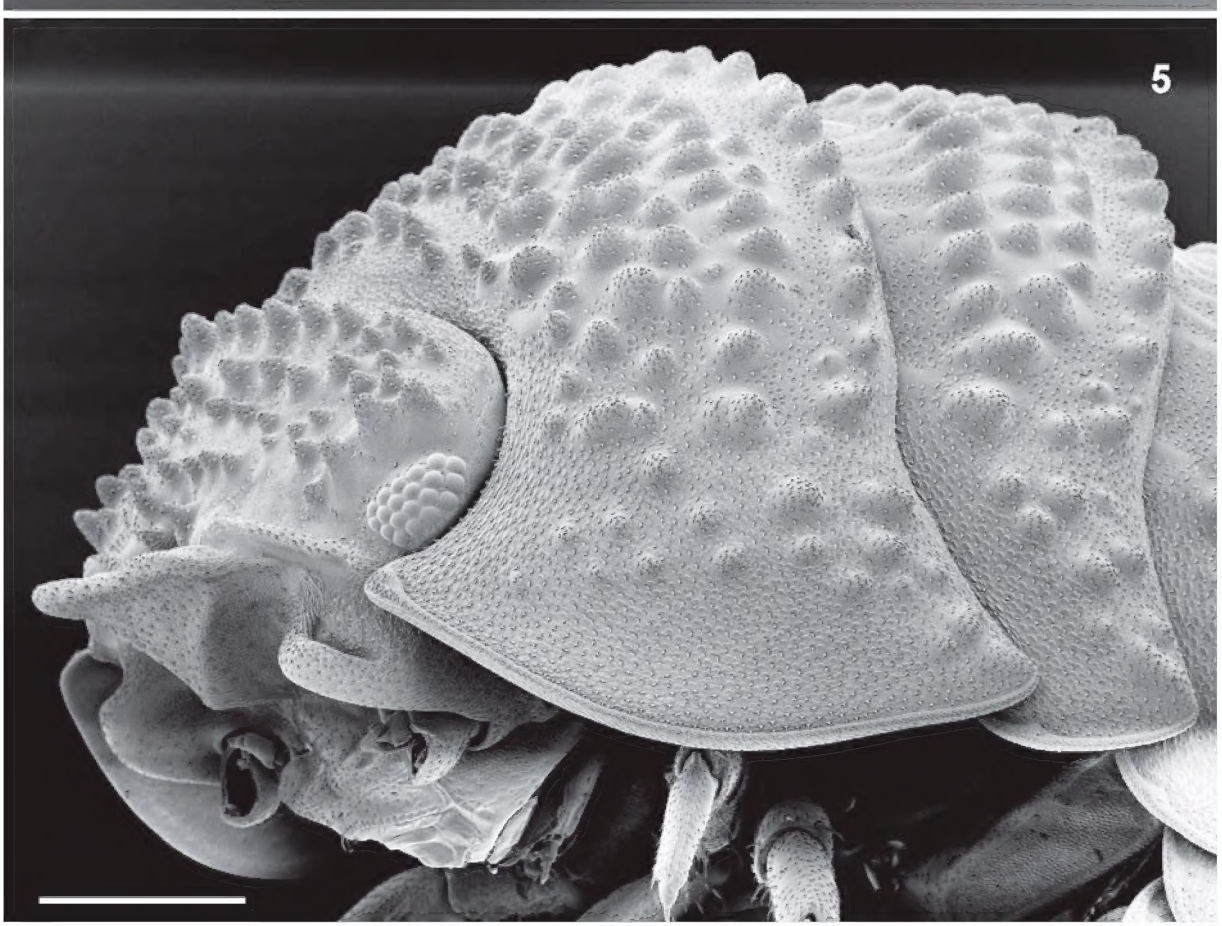
3.2 *Armadillidium album* Dollfus, 1887

This species was treated in the 25th contribution of this series (SCHMALFUSS 2008). It is known from the Mediterranean coasts and the Atlantic coasts of Europe. In Greece it has been found on the Ionian island Zákinthos and on the Aegean coast of the northeastern mainland.

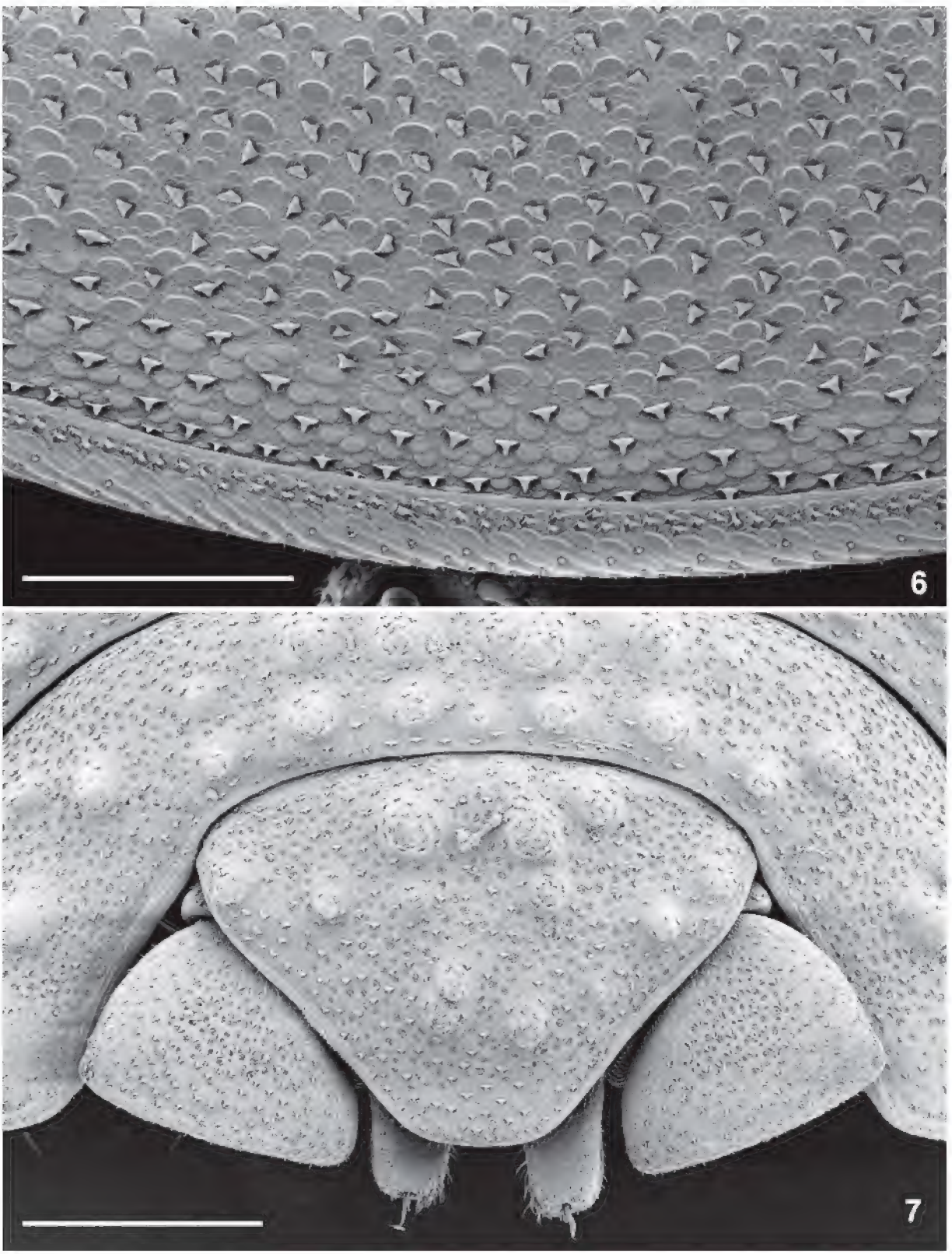


Figs. 2–3. *Armadillidium beieri* (island Kefalloniá, SMNS 2551), ♂, 18.0 × 7.8 mm. – **2**. Head and pereion-tergite 1, dorsal view. **3**. Head, dorsal view. – Scales: 1 mm.

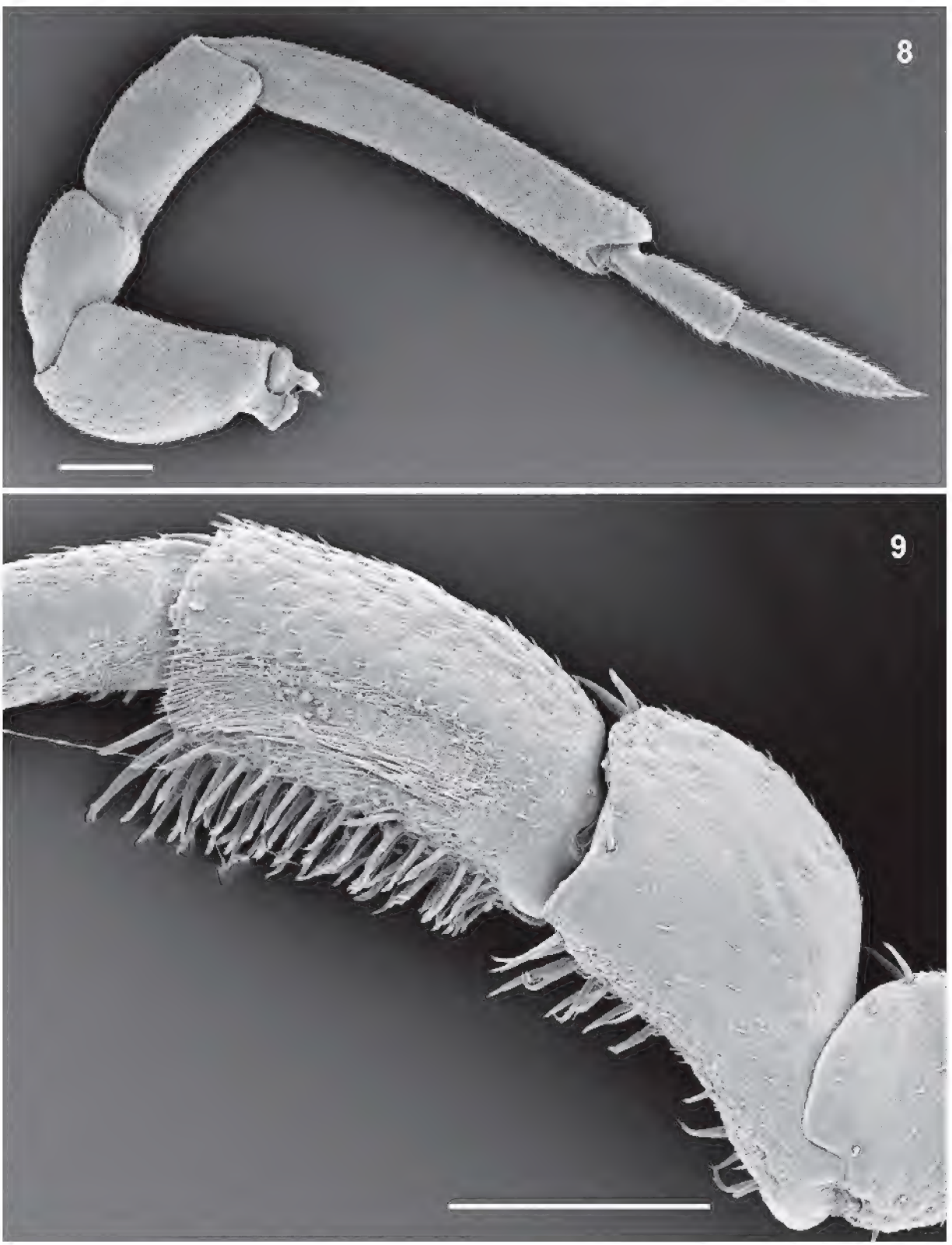




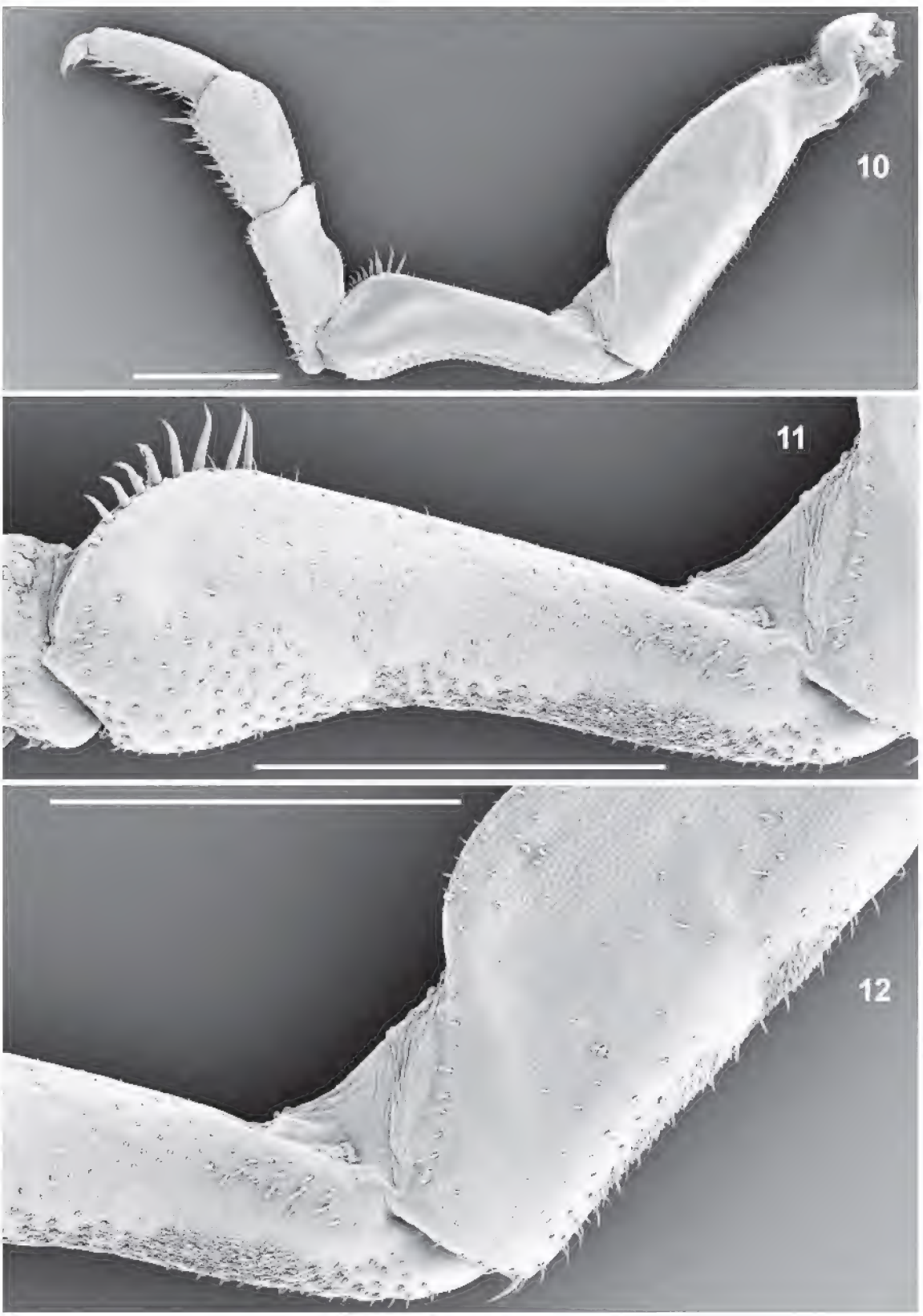
Figs. 4–5. *Armadillidium beieri* (island Kefalloniá, SMNS 2551). – **4**. ♂, 15.2 × 7.0 mm, head, frontal view. **5**. ♀, 15.0 × 7.0 mm, head and pereion-tergite 1, lateral view. – Scales: 1 mm.



Figs. 6–7. *Armadillidium beieri* (island Kefalloniá, SMNS 2551). – **6**. ♀, 15.0 × 7.0 mm, lateral margin of pereion-tergite 1, detail. **7**. ♂, 15.2 × 7.0 mm, telson and uropods, dorsal view. – Scales: 0.3 mm (6), 0.7 mm (7).



Figs. 8–9. *Armadillidium beieri* (island Kefalloniá, SMNS 2551), ♂, 18.0 × 7.8 mm. – **8**. Antenna. **9**. Pereiopod 1, frontal view. – Scales: 0.5 mm.



Figs. 10–12. *Armadillidium beieri* (island Kefalloniá, SMNS 2551), ♂, 18.0 × 7.8 mm. – **10**. Pereiopod 7, frontal view. **11**. Ischium 7, caudal view. **12**. Pereiopod 7, proximal part, caudal view. – Scales: 1 mm.

3.3 *Armadillidium arcadicum* Verhoeff, 1901

Synonym: *Armadillidium humile* Strouhal, 1936.

This species was treated in the 23rd contribution of this series (Schmalfuss 2006a). It is known from the Ionian islands Kefalloniá and Zákinthos (described as *A. humile*) and the western, central and southern parts of the Peloponnese.

3.4 *Armadillidium beieri* Strouhal, 1937 (Figs. 2–14, map Fig. 15)

Literature records

Strouhal 1936: 92 (nomen nudum, Greece, Ionian island Lefkáda); Strouhal 1937a: 45, figs. 1–2 (Ionian island Lefkáda); Strouhal 1956: 586, figs. 1–2 (Ionian islands Lefkáda and Kálamos).

Material examined

Greece: 70 ex. and appendage preparations of 4 ♂♂ (syntypes), island Lefkáda (= Levkas), Sívros, leg. Beier, 25.IV.1929 (NMW). – 52 ex., island Kefalloniá, northern peninsula, 1 km W of Fiskárdo, maquis, 100 m, leg. Erhard & Schmalfuss, 4.V.1996 (SMNS 2551). – 5 ex., island Kefalloniá, northern peninsula, Ássos, maquis, leg. Hauser, 6.IV.1970 (SMNS 2115). – 3 ex., island Kefalloniá, 5 km E of Ássos, phrygana, 600 m, leg. Erhard & Schmalfuss, 5.V.1996 (SMNS 2552).

Diagnostic characters

Maximum dimensions: 18.0 × 7.8 mm.

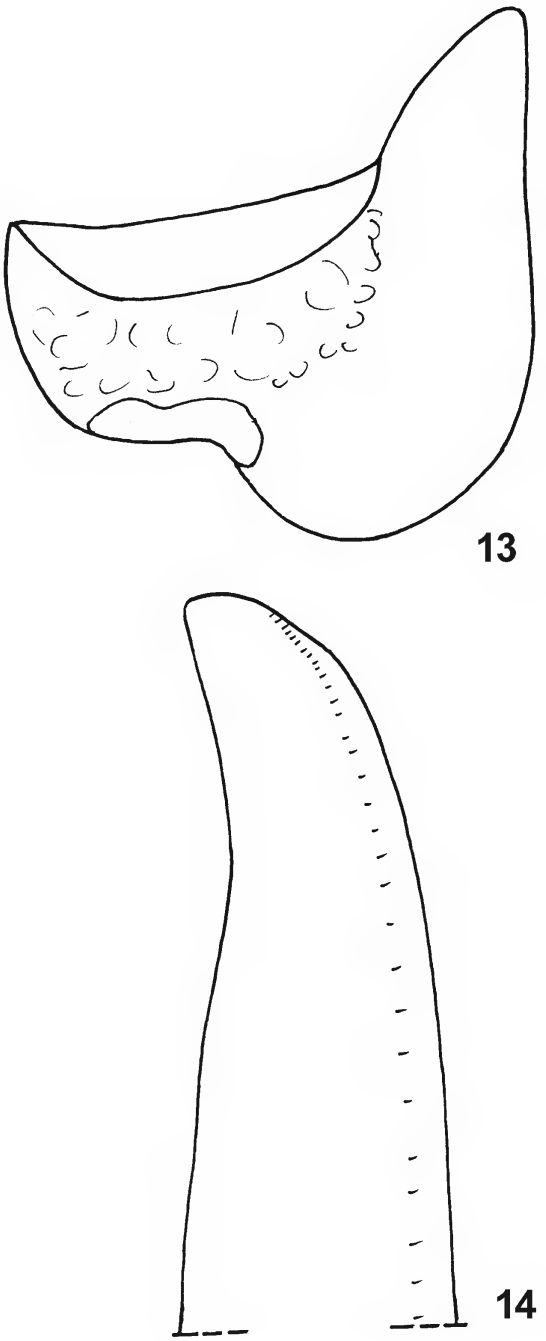
Coloration: Brownish gray, females and juveniles lighter with yellowish epimera.

Cuticular structures: Tergites with very pronounced pointed tubercles (Fig. 2).

Frontal shield from behind conspicuously surpassing frontal margin, upper margin slightly concave (Fig. 3); antennal lobes in frontal view trapezoidal (Fig. 4). Hind margin of pereion-epimeron 1 with faint blunt angle (Fig. 5), cuticular structures (scale-setae etc.) on lateral part (see Fig. 6). Telson considerably wider than long, with slightly concave sides and truncate apex (Fig. 7). Flagellum of antenna with distal segment one third longer than proximal one (Fig. 8). Male pereiopod 1 with brush on carpus, but not on merus (Fig. 9). Male pereiopod 7 with dorsally enlarged carpus (Fig. 10), ischium 7 ventrally concave, frontal side without distal hair-field (Fig. 10), proximally on ventral part of ischium and on medial side of basipodite with short scaly hairfields (Figs. 11, 12). Male pleopod-exopodite 1 with pointed triangular hind-lobe (Fig. 13), endopodite 1 with apex slightly bent outwards (Fig. 14).

Distribution (map Fig. 15)

Greece, Ionian islands Lefkáda, Kálamos and Kefalloniá. Not recorded from Zákinthos, as erroneously reported in Schmalfuss (2003).



Figs. 13–14. *Armadillidium beieri* (island Lefkáda, NMW), ♂, syntype, Strouhal's preparation. – **13**. Pleopod-exopodite 1, dorsal view. **14**. Pleopod-endopodite 1, apex.

Remarks

The preparations made by Strouhal and labeled as "Type" contain the appendages of four males. Therefore no lectotype is designated.

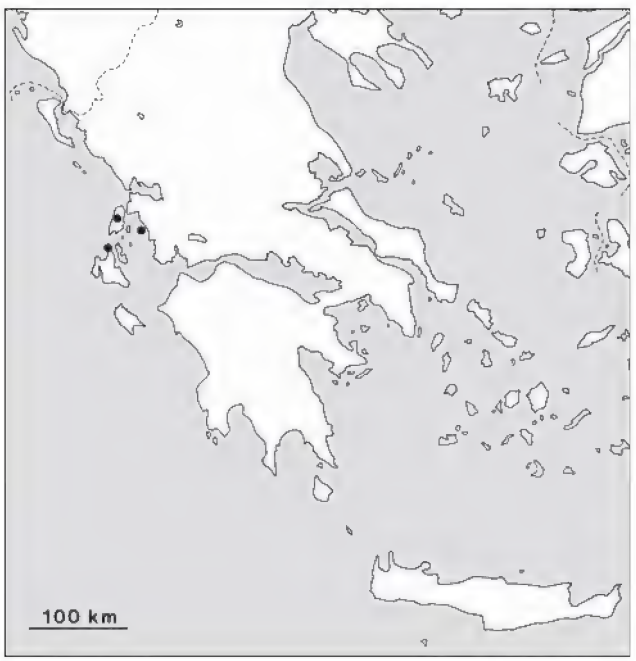


Fig. 15. Records of *Armadillidium beieri*.

3.5 *Armadillidium bicurvatum* Verhoeff, 1901

This species was treated in the 23rd contribution of this series (Schmalfuss 2006a). It is known from the western parts of Greece including the Peloponnese and western Crete and has also been found in southern Albania.

3.6 *Armadillidium cephalonicum* Strouhal, 1929 (Figs. 16–24, map Fig. 25)

Literature records

Strouhal 1929: 110, figs. 49–50 (Greece, Ionian island Kefalloniá); Strouhal 1936: 101, figs. 18–20 (Ionian island Kefalloniá); ?Arcangeli 1952: 9 (Albania and Yugoslavia).

Material examined

Greece: 89 ex., island Kefalloniá, Énos Mountain, leg. Malicky, 2.VI.1977 (SMNS 1169). – 3 ex., island Kefalloniá, 1 km W of Póros, *Platanus*, leg. Erhard & Schmalfuss, 27.IV.1996 (SMNS 2540). – 9 ex., island Kefalloniá, between Póros and Skála, maquis, leg. Erhard & Schmalfuss, 28.IV.1996 (SMNS 2541). – 32 ex., island Kefalloniá, 10 km SSW of Argostóli, sandy beach, leg. Erhard & Schmalfuss, 2.V.1996 (SMNS 2546). – 2 ex., island Kefalloniá, 14 km ESE of Argostóli, pebble beach, leg. Erhard & Schmalfuss, 2.V.1996 (SMNS 2547). – 9 ex., island Kefalloniá, Énos Mountain, 1300–1600 m, *Abies*, leg. Erhard & Schmalfuss, 3.V.1996 (SMNS 2550). – 2 ex., island Kefalloniá, north, 1 km W of Fiskárdo, maquis, 100 m, leg. Erhard & Schmalfuss, 4.V.1996 (SMNS 2551). – 24 ex., island Kefalloniá, beach NNE of Komitáta, leg. Erhard & Schmalfuss, 5.V.1996 (SMNS 2553). – 48 ex., island Kefalloniá, 9 km N of Lixúri, swampy beach, leg. Erhard & Schmalfuss, 6.V.1996 (SMNS 2555). – 7 ex., island Kefalloniá, beach below Zóla, leg. Erhard & Schmalfuss, 6.V.1996 (SMNS 2556). – 8 ex., island Kefalloniá, 3 km SW of Lixúri, pasture, leg. Erhard & Schmalfuss, 7.V.1996 (SMNS 2557). – 3 ex., island Kefalloniá, Lixúri peninsula, southern tip, rocky beach, leg. Erhard & Schmalfuss, 7.V.1996 (SMNS 2558). – 18 ex., island Zákinthos, Alikés, lagoons and olive groves, leg. Erhard & Schmalfuss, 9.V.1996 (SMNS 2562).

Diagnostic characters

Maximum dimensions: 15.2 × 6.2 mm.

Coloration: Tergites grayish brown with yellow muscle spots, epimera yellow.

Cuticular structures: Tergites smooth (Fig. 16).

Frontal shield from behind slightly surpassing frontal margin of head, upper margin straight, with right angles laterally (Fig. 17); antennal lobes in frontal view trapezoidal (Fig. 18). Hind margin of pereion-epimeron 1 with faint rounded concavity (Fig. 19). Telson slightly wider than long, with straight sides and rounded apex (Fig. 20). Antenna see Fig. 19, the two segments of the flagellum of nearly the same length. Male carpus 1 with brush of short setae (Fig. 21). Male ischium 7 ventrally slightly concave, frontally with distal hair-field and ventrally setose (Figs. 22, 23). Male pleopod-exopodite 1 with well-developed pointed hind-lobe (Fig. 24).

Distribution (map Fig. 25)

Greece, Ionian islands Kefalloniá and Zákinthos (see Remarks below).

Remarks

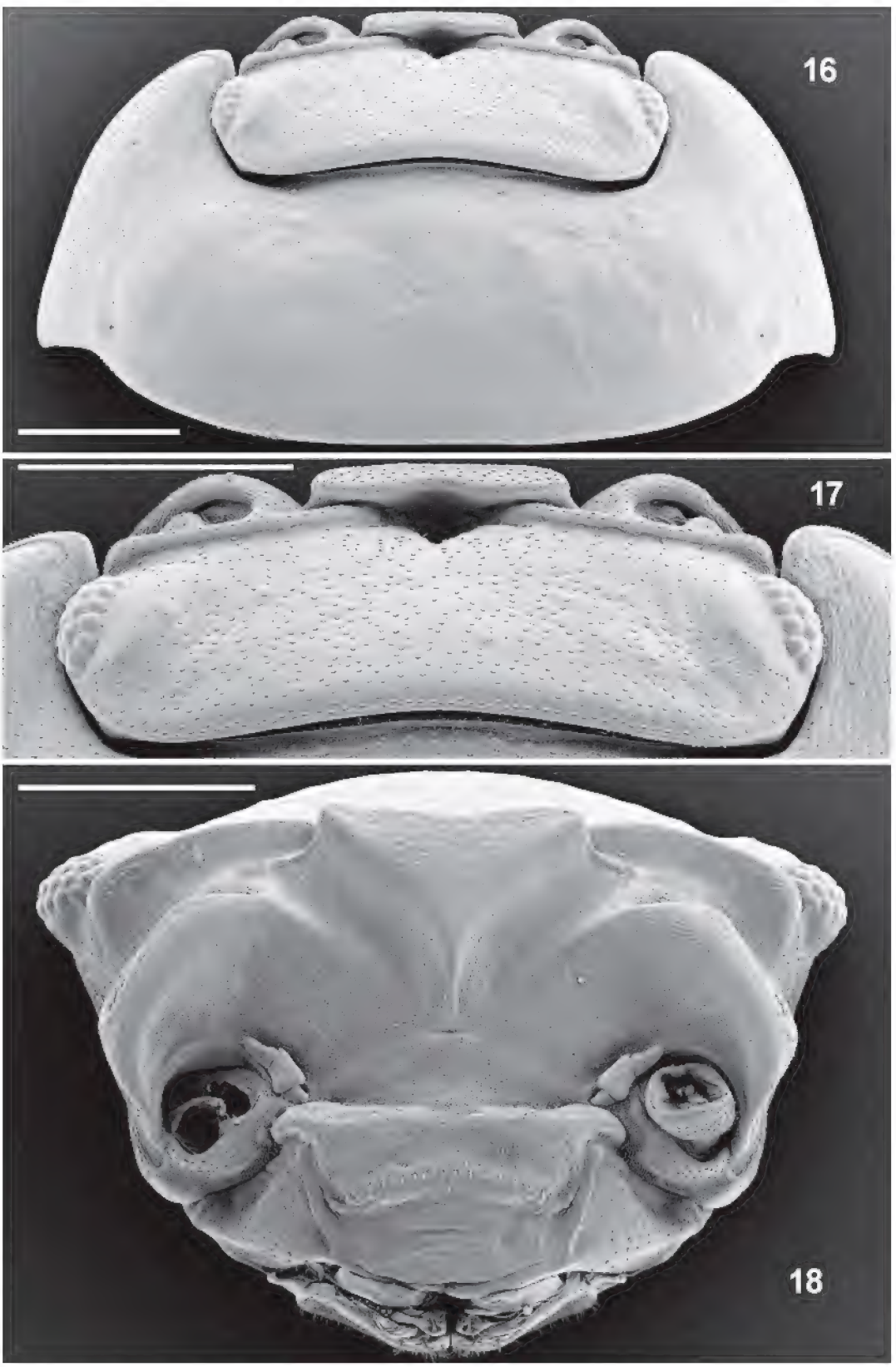
Arcangeli (1952) synonymized *A. obenbergeri* Frankenberger, 1941 with *A. cephalonicum* and reported this species from Albania and "Yugoslavia". From the description and from the distributional data it seems, however, that *A. obenbergeri* is a separate species and that the specimens reported by Arcangeli belong to this species.

3.7 *Armadillidium corcyraeum* Verhoeff, 1901

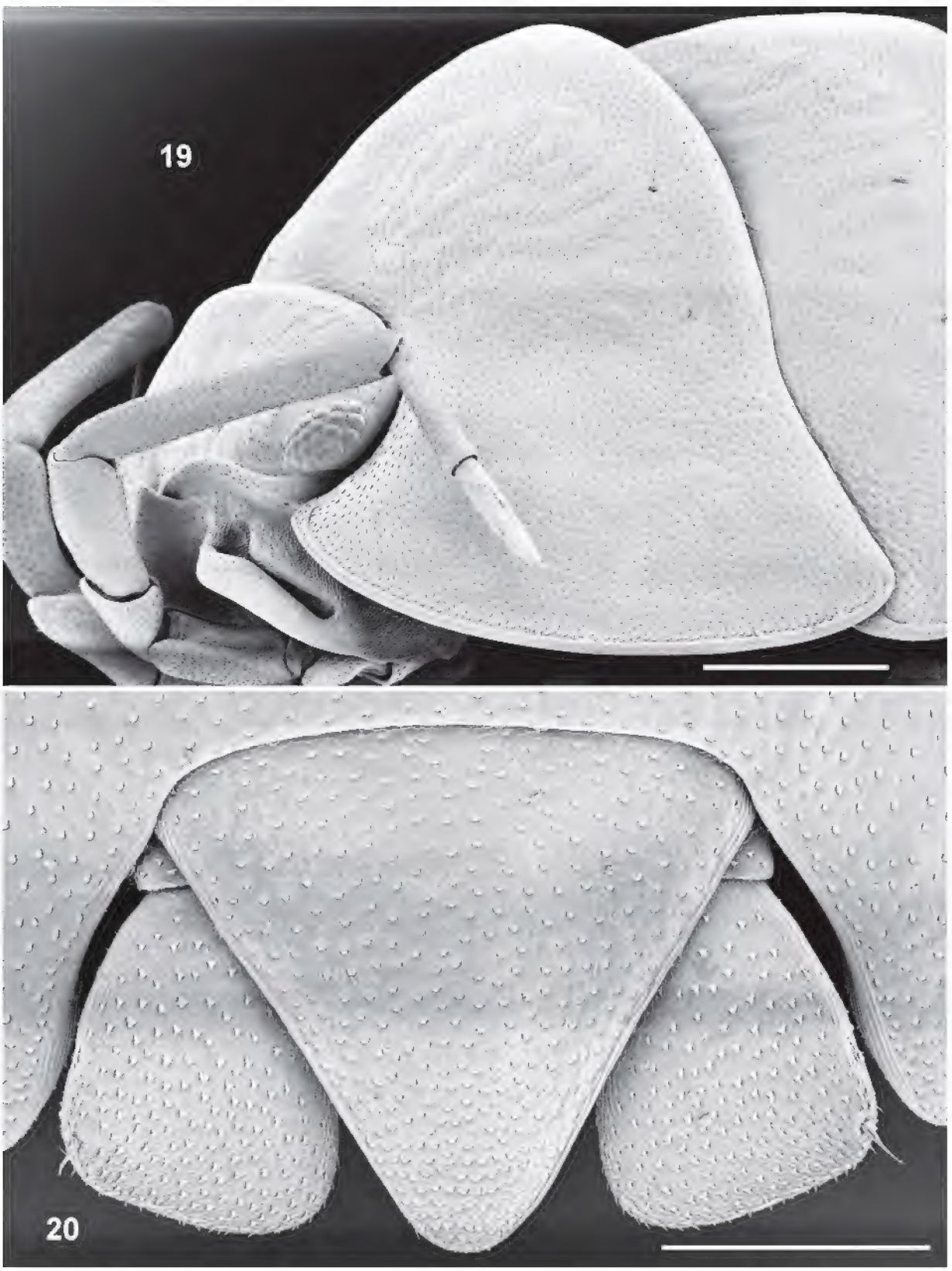
Synonym: *Armadillidium odysseum* Verhoeff, 1901.

This species was treated in the 26th contribution of this series (Schmalfuss 2010). It is known for sure from the Ionian islands Kérkira and Lefkáda and the adjacent mainland of the western Epirus, but to be expected also in southern Albania.

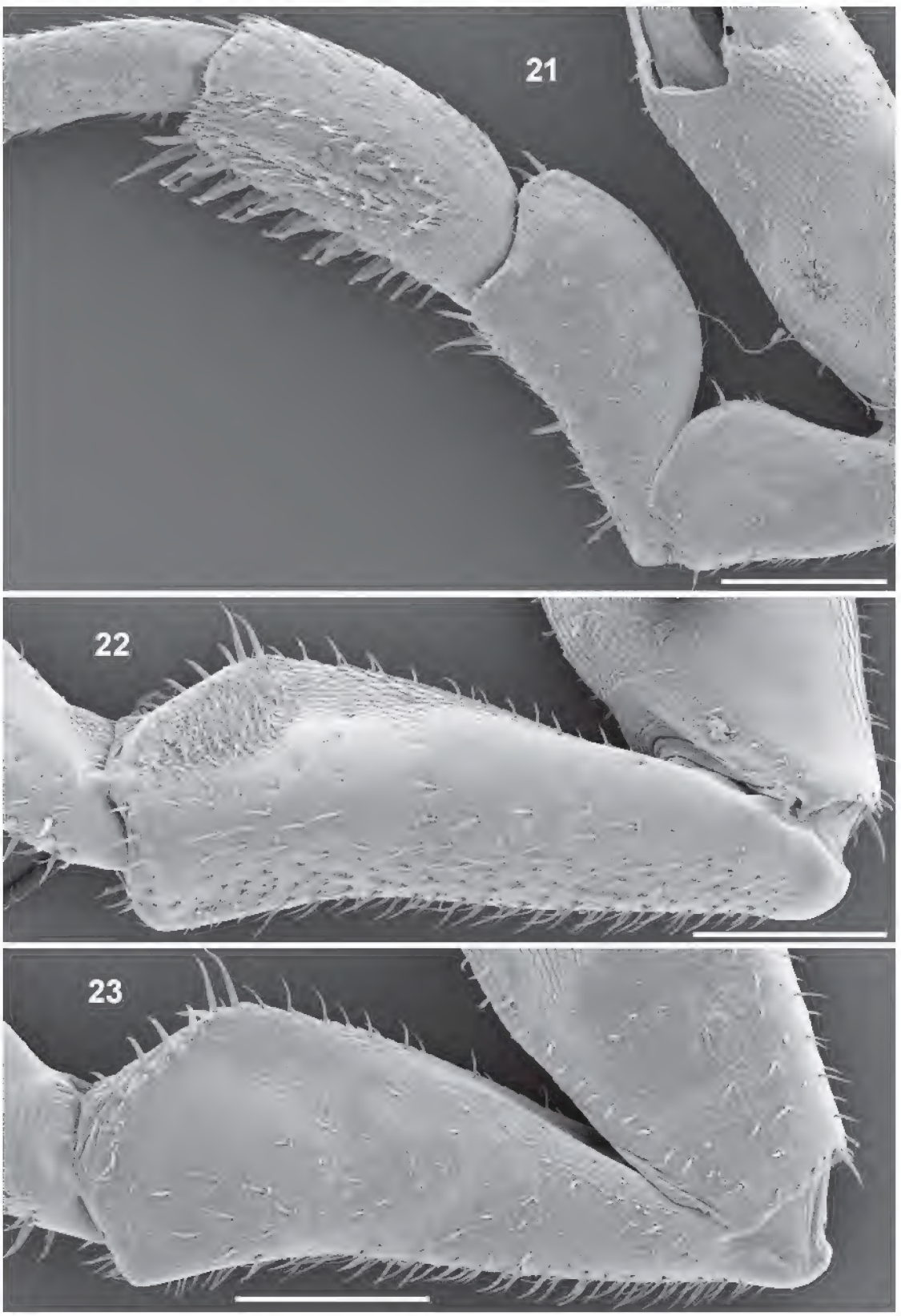
3.8 *Armadillidium frontemarginatum* Strouhal, 1927 (Figs. 26–35, map Fig. 36)



Figs. 16–18. *Armadillidium cephalonicum* (island Kefalloniá, SMNS 2555). – **16**. ♂, 12.2 × 5.0 mm, head and pereion-tergite 1, dorsal view. **17**. ♂, 12.2 × 5.0 mm, head, dorsal view. **18**. ♀, 15.2 × 6.2 mm, head, frontal view. – Scales: 1 mm.



Figs. 19–20. *Armadillidium cephalonicum* (island Kefalloniá, SMNS 2555). – **19**. ♀, 15.0 × 6.2 mm, head and pereion-tergite 1, lateral view. **20**. ♂, 12.2 × 5.0 mm, telson and uropods, dorsal view. – Scales: 1 mm (19), 0.5 mm (20).



Figs. 21–23. *Armadillidium cephalonicum* (island Kefalloniá, SMNS 2555), ♂, 11.5 × 4.7 mm. – **21**. Pereiopod 1, frontal view. **22**. Ischium 7, frontal view. **23**. Ischium 7, caudal view. – Scales: 0.3 mm.

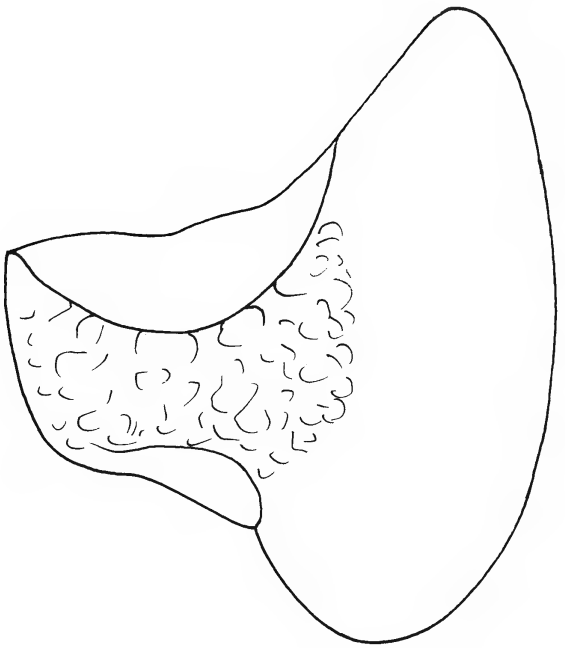


Fig. 24. *Armadillidium cephalonicum* (island Kefalloniá, SMNS 2555), ♂, 11.5 × 4.7 mm, pleopod-exopodite 1, dorsal view.

Literature records

STROUHAL 1927: 18, figs. 8–10 (Greece, Ionian island Kefalloniá); STROUHAL 1936: 63, 93, figs. 14–17 (Ionian islands Lefkáda and Kefalloniá); STROUHAL 1939: 183 (Ionian island Zákinthos); STROUHAL 1956: 587 (Ionian islands Lefkáda, Kálamos and Meganísi).

Material examined

Greece: ♀ (lectotype, 18 mm long), island Kefalloniá, leg. WERNER, IV.1894 (NMW). – 14 ex., island Lefkáda, leg. H. GOESSLER, VII.1910 (SMNS 2068). – 4 ex., island Kefalloniá, Valsamáta, leg. HAUSER, 11.IV.1970 (SMNS 2120). – 48 ex., island Kefalloniá, southeast, 1 km W of Póros, *Platanus*, leg. ERHARD & SCHMALFUSS, 27.IV.1996 (SMNS 2540). – 5 ex., island Kefalloniá, between Póros and Skála, maquis, leg. ERHARD & SCHMALFUSS, 28.IV.1996 (SMNS 2541). – 32 ex., island Kefalloniá, 3 km NW of Póros, *Pinus* and maquis, leg. ERHARD & SCHMALFUSS, 29.IV.1996 (SMNS 2542). – 10 ex., island Kefalloniá, 6 km WNW of Póros, Lake Ávithos, 300 m, leg. ERHARD & SCHMALFUSS, 30.IV.1996 (SMNS 2543). – 4 ex., island Kefalloniá, 5 km WNW of Póros, stream, 200 m, leg. ERHARD & SCHMALFUSS, 30.IV.1996 (SMNS 2544). – 26 ex., island Kefalloniá, Énos Mountain, northern foothills, 3 km W of Digaléto, maquis, 700 m, leg. ERHARD & SCHMALFUSS, 3.V.1996 (SMNS 2549). – 46 ex., island Kefalloniá, north, 1 km W of Fiskárdo, maquis, 100 m, leg. ERHARD & SCHMALFUSS, 4.V.1996 (SMNS 2551). – 40 ex., island Kefalloniá, 5 km ESE of Ássos, phrygana, 600 m, leg. ERHARD & SCHMALFUSS, 5.V.1996 (SMNS 2552). – 15 ex., island Kefalloniá, beach NNE of Komitáta, leg. ERHARD & SCHMALFUSS, 5.V.1996 (SMNS 2553). – 28 ex., island Kefalloniá, 2 km S of Ássos, Mírtos Beach, leg. ERHARD & SCHMALFUSS, 5.V.1996 (SMNS 2554). – 1 ex., island Kefalloniá, beach below Zóla, leg. ERHARD & SCHMALFUSS, 6.V.1996 (SMNS 2556). – 3 ex., island Kefalloniá, 3 km SW of Lixúri, pasture, leg. ERHARD & SCHMALFUSS, 7.V.1996 (SMNS 2557). – 6 ex., island Kefalloniá, 3 km SSW of Sámi, maquis, olive trees, stream, leg. ERHARD & SCHMALFUSS, 8.V.1996 (SMNS 2560). – 18 ex., island Zákinthos, Alikés, lagoons and olive groves, leg. ERHARD & SCHMALFUSS, 9.V.1996 (SMNS 2562). – 19 ex., island Zákinthos, Lake Keriú, swamp and pebble beach, leg. ERHARD & SCHMALFUSS, 10.–15.V.1996 (SMNS 2563, 2577). – 2 ex., island Zákinthos, 2 km W of Lithákia, maquis, leg. ERHARD & SCHMALFUSS, 14.V.1996 (SMNS 2575).

Diagnostic characters

Maximum dimensions: 18.5 × 8.0 mm.

Coloration: Dark bluish gray, juveniles lighter.

Cuticular structures: Tergites granulated (Fig. 26).

Frontal shield from behind one third as high as it is wide, laterally with right angles, caudally with a deep groove; interocular ridges forming high trapezoidal crests (Fig. 27); antennal lobes in frontal view semicircular (Fig. 28). Hind margin of pereion-epimeron 1 with sharp angle (Fig. 29). Telson wider than long, with nearly straight sides and truncate apex (Fig. 30). Flagellum of antenna with distal segment slightly shorter than proximal one (Fig. 31). Male carpus 1 with ventral brush of setae (Fig. 32). Male ischium 7 ventrally concave, frontal side without distal hair-field (Figs. 33, 34). Male pleopod-exopodite 1 with pointed triangular hind-lobe (Fig. 35).

Distribution (map Fig. 36)

Greece, Ionian islands Lefkáda, Meganísi, Kálamos, Kefalloniá and Zákinthos.

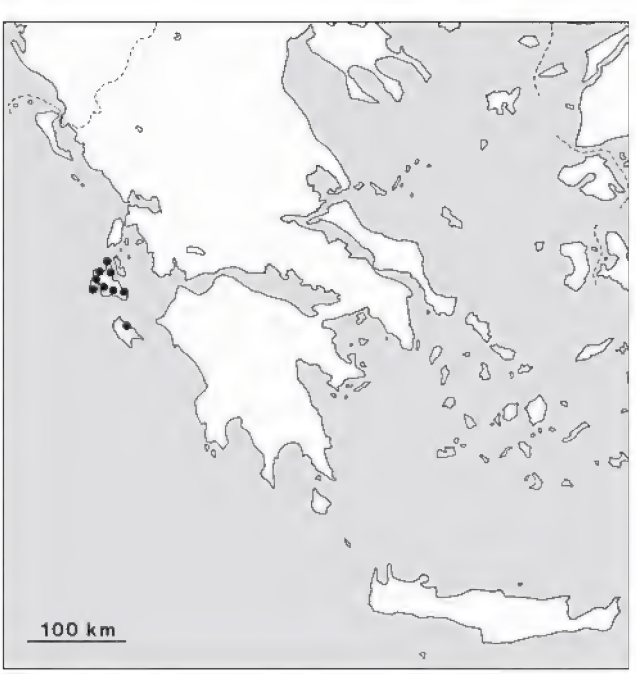
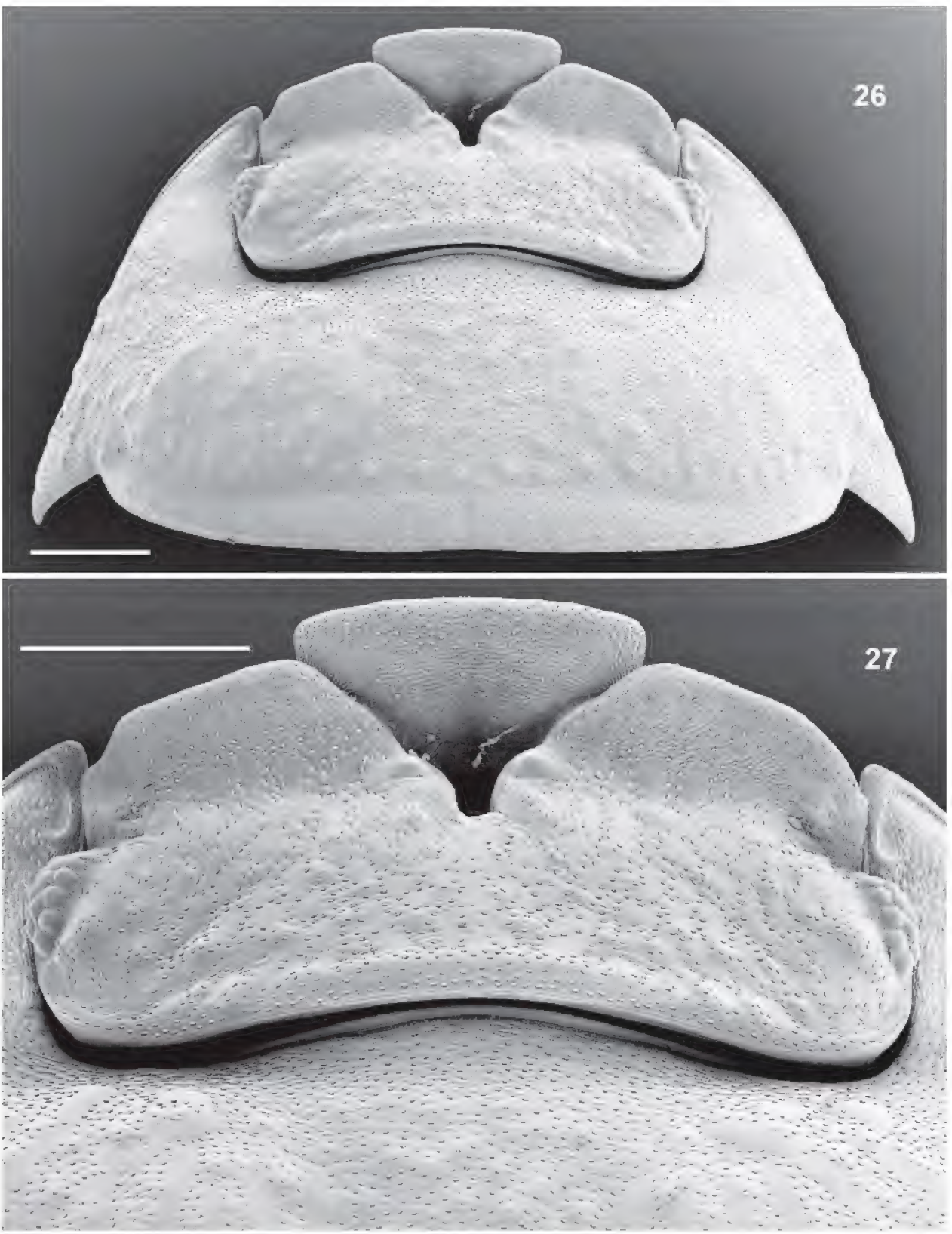
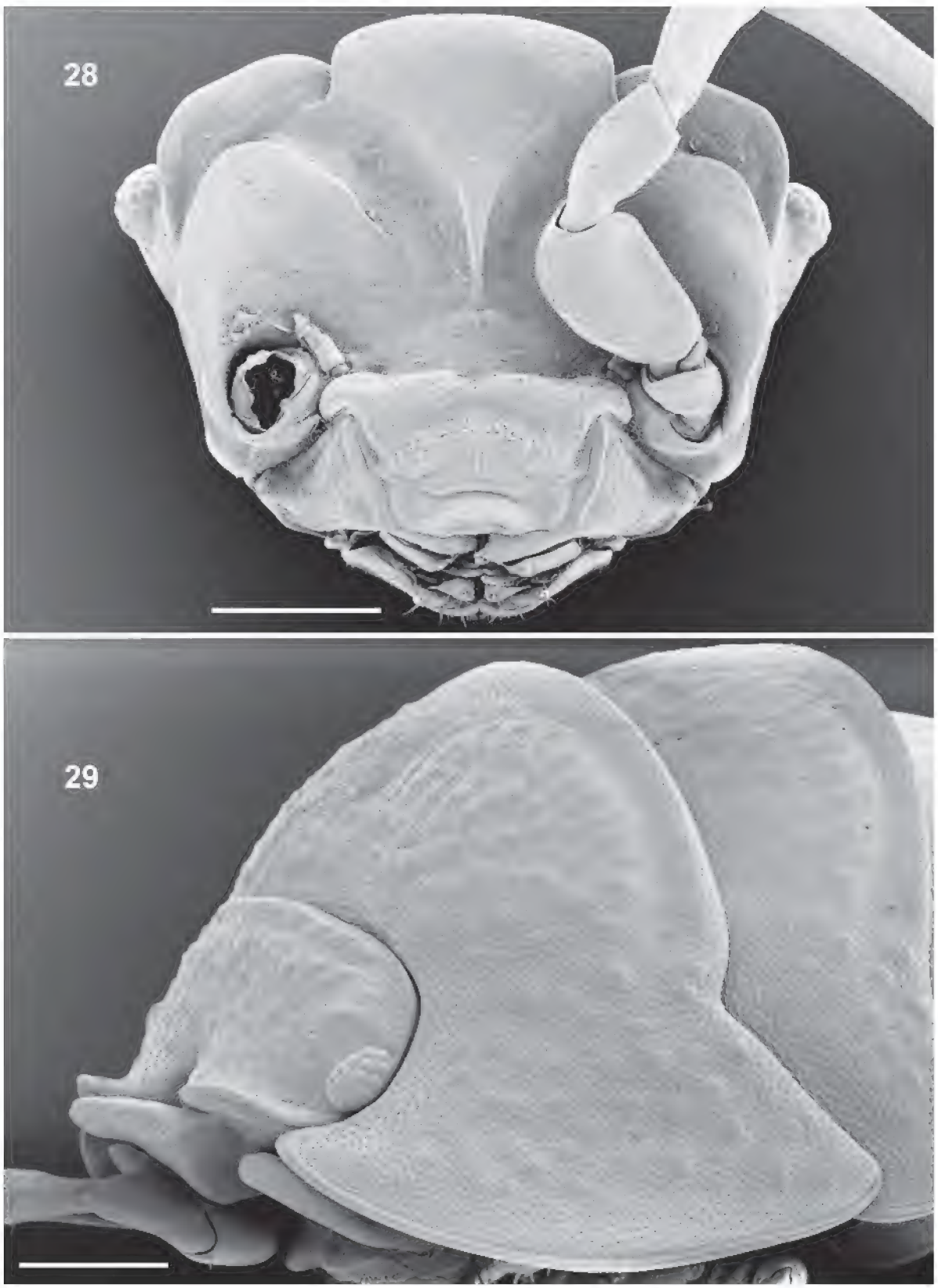


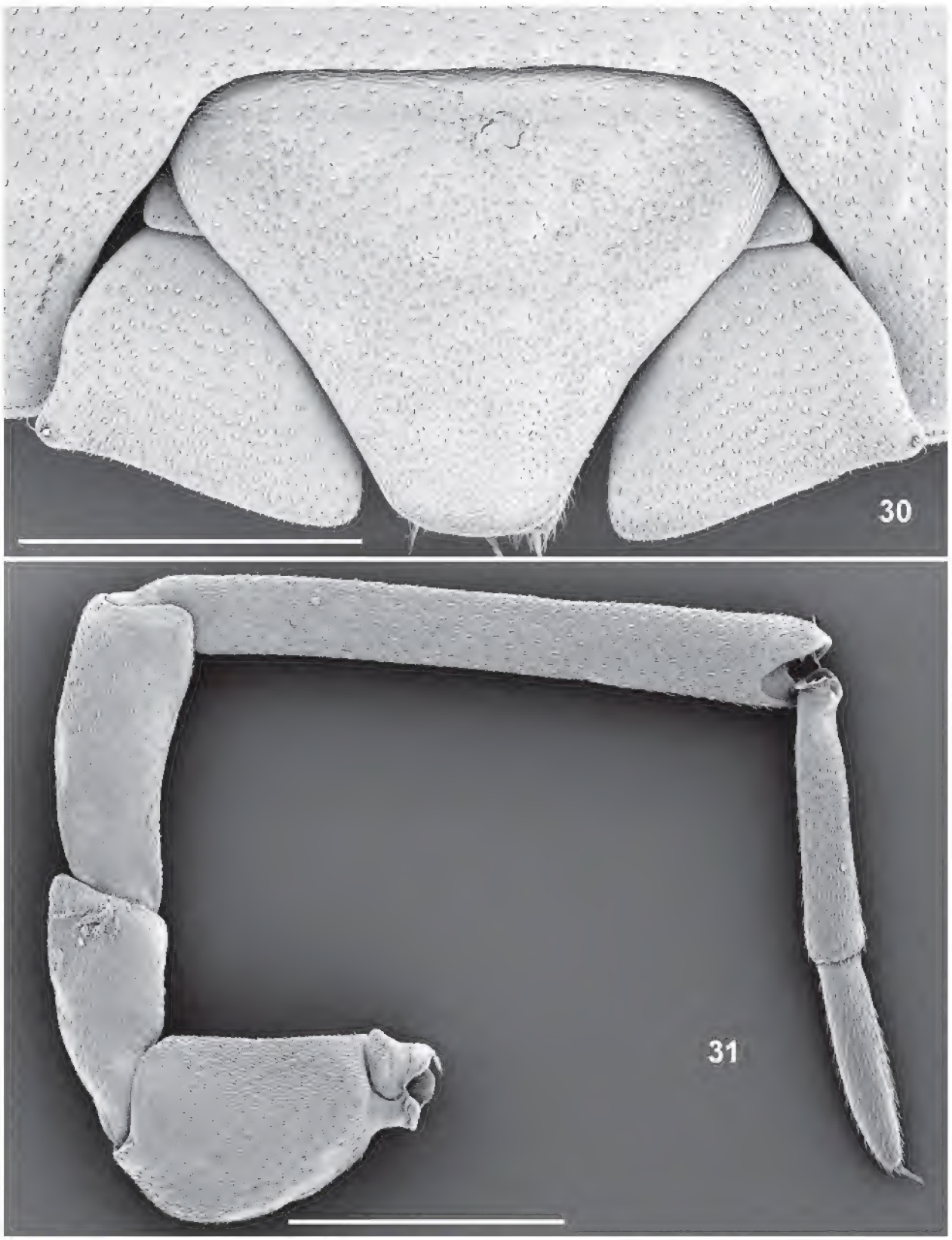
Fig. 25. Records of *Armadillidium cephalonicum*.



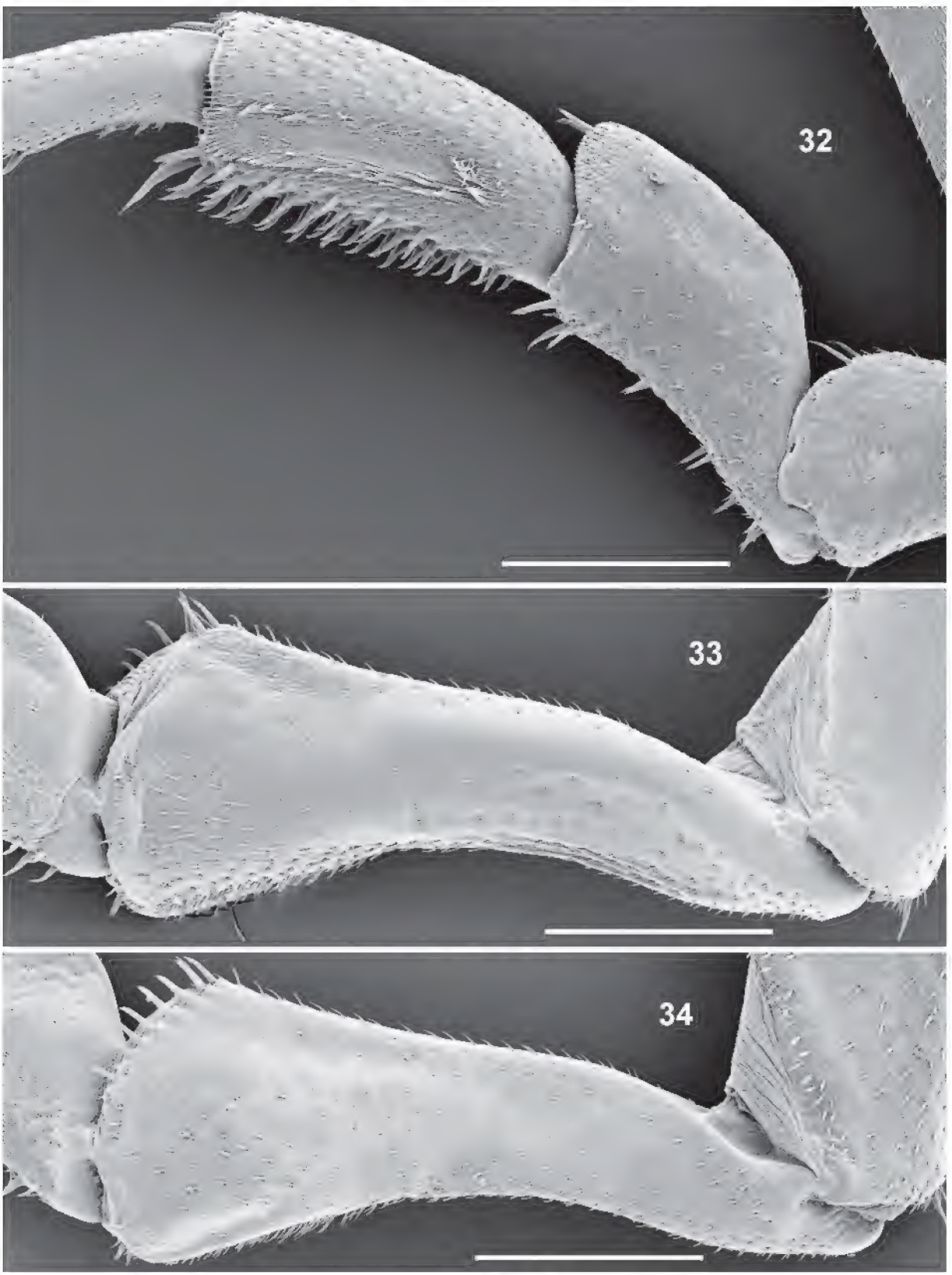
Figs. 26–27. *Armadillidium frontemarginatum* (island Kefalloniá, SMNS 2552), ♂, 18.5 × 7.4 mm. – **26**. Head and pereion-tergite 1, dorsal view. **27**. Head, dorsal view. – Scales: 1 mm.



Figs. 28–29. *Armadillidium frontemarginatum* (island Kefalloniá, SMNS 2552). – **28**. Head, frontal view. **29**. Head and pereiontergite 1, lateral view. – Scales: 1 mm.



Figs. 30–31. *Armadillidium frontemarginatum* (island Kefalloniá, SMNS 2552). – **30**. ♀, 18.5 × 8.0 mm, telson and uropods, dorsal view. **31**. ♂, 18.5 × 7.4 mm, antenna. – Scales: 1 mm.



Figs. 32–34. *Armadillidium frontemarginatum* (island Kefalloniá, SMNS 2552), ♂, 18.5 × 7.4 mm. – **32**. Pereiopod 1, frontal view. **33**. Ischium 7, frontal view. **34**. Ischium 7, caudal view. – Scales: 0.6 mm.

Remarks

The very conspicuous head structure shows the species to be the closest relative of *A. stymphalicum* Schmalfuss, 2006 from the Peloponnese (compare SCHMALFUSS 2006a: 80).

3.9 *Armadillidium frontetriangulum* Verhoeff, 1901

This species was treated in the 26th contribution of this series (SCHMALFUSS 2010). It is known from the Greek island Kérkira and the northwestern Greek mainland.

3.10 *Armadillidium granulatum* Brandt, 1833

The species has been treated in the 23rd contribution of this series (SCHMALFUSS 2006a). It is known from the coasts of the Mediterranean Sea, east to Asia Minor and Libya, and the southwestern coast of the Black Sea; isolated records exist from the Atlantic coast of Portugal and northern France. In the Ionian islands it has been recorded from Lefkáda and Kefalloniá (STROUHAL 1936) and the Strofádes islands which lie about 60 km S of Zákinthos (SCHMALFUSS 2006a).

Fig. 35. *Armadillidium frontemarginatum* (island Kefalloniá, SMNS 2552), ♂, 18.5 × 7.4 mm, pleopod-exopodite 1, dorsal view. – Scale: 0.8 mm.

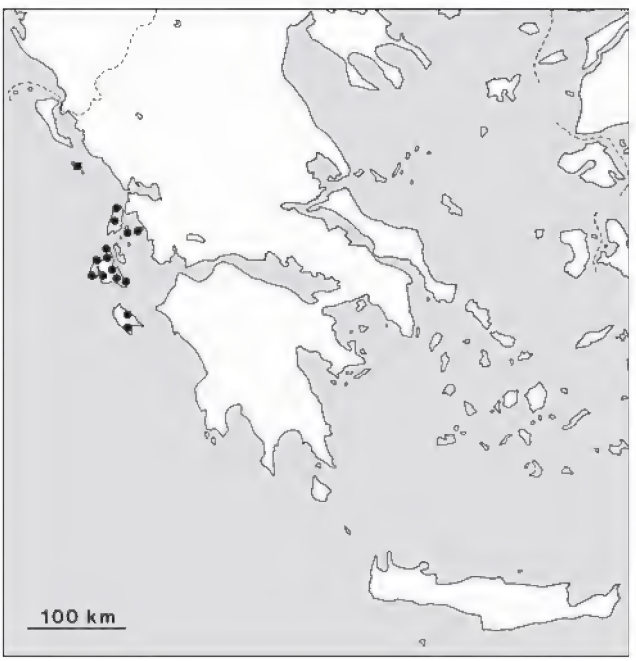


Fig. 36. Records of *Armadillidium frontemarginatum* (●) and *A. hauseni* (■).

3.11 *Armadillidium hauseni* Schmalfuss, 1985 (Figs. 37–46, map Fig. 36)

Literature record

SCHMALFUSS 1985: 2, figs. 2–6 (Greece, Ionian island Paxí).

Material examined

Greece: ♂ (holotype), island Paxí, leg. SCHAWALLER & SCHEUERN, 19.IV.1981 (SMNS T149). – 4♂♂, 8♀♀ (paratypes), collecting data as before (SMNS T150). – 1 ♂ (paratype), island Paxí, leg. HAUSEN, IV.1979 (SMNS T151).

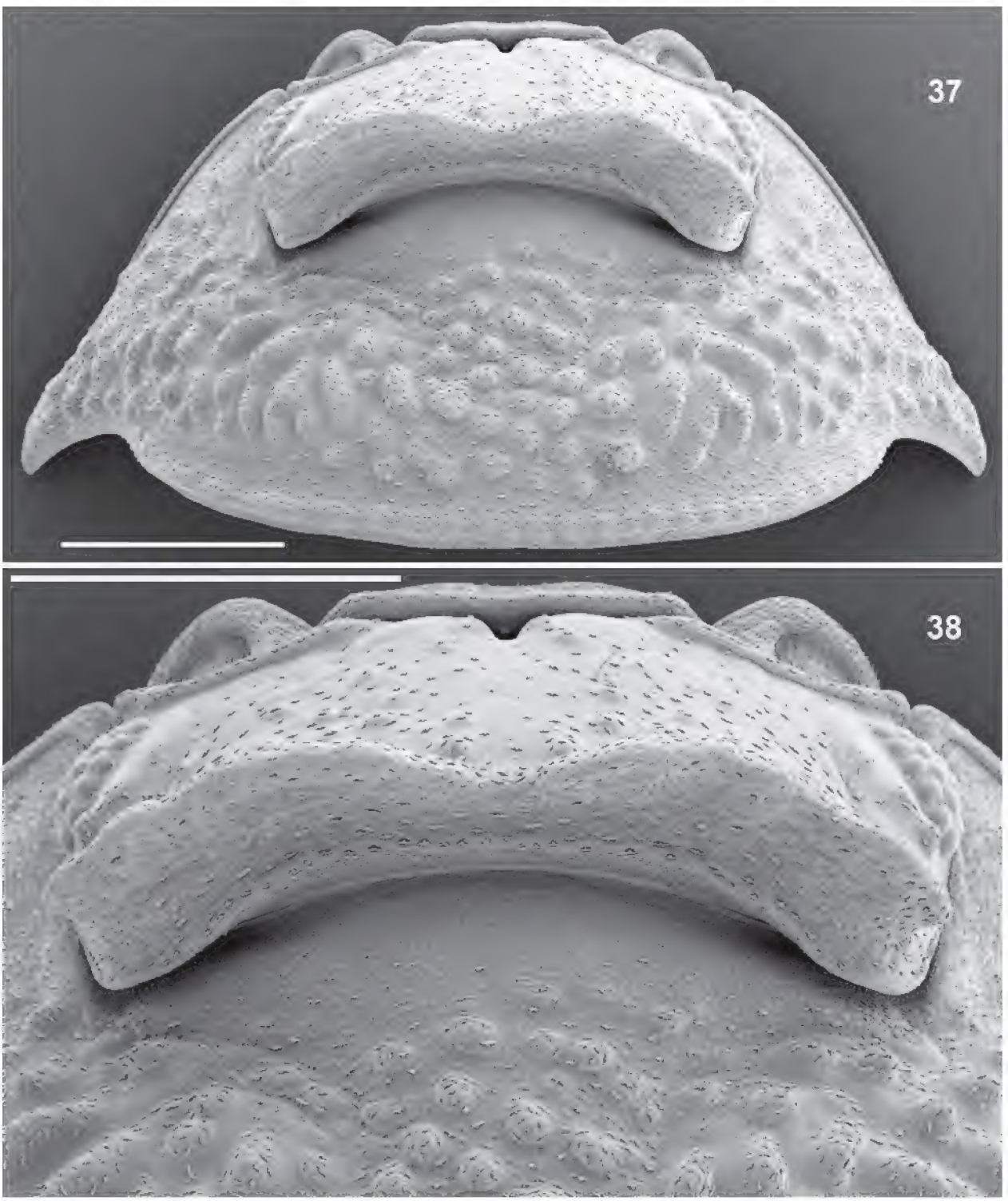
Diagnostic characters

Maximum dimensions: 14.0 × 7.3 mm.

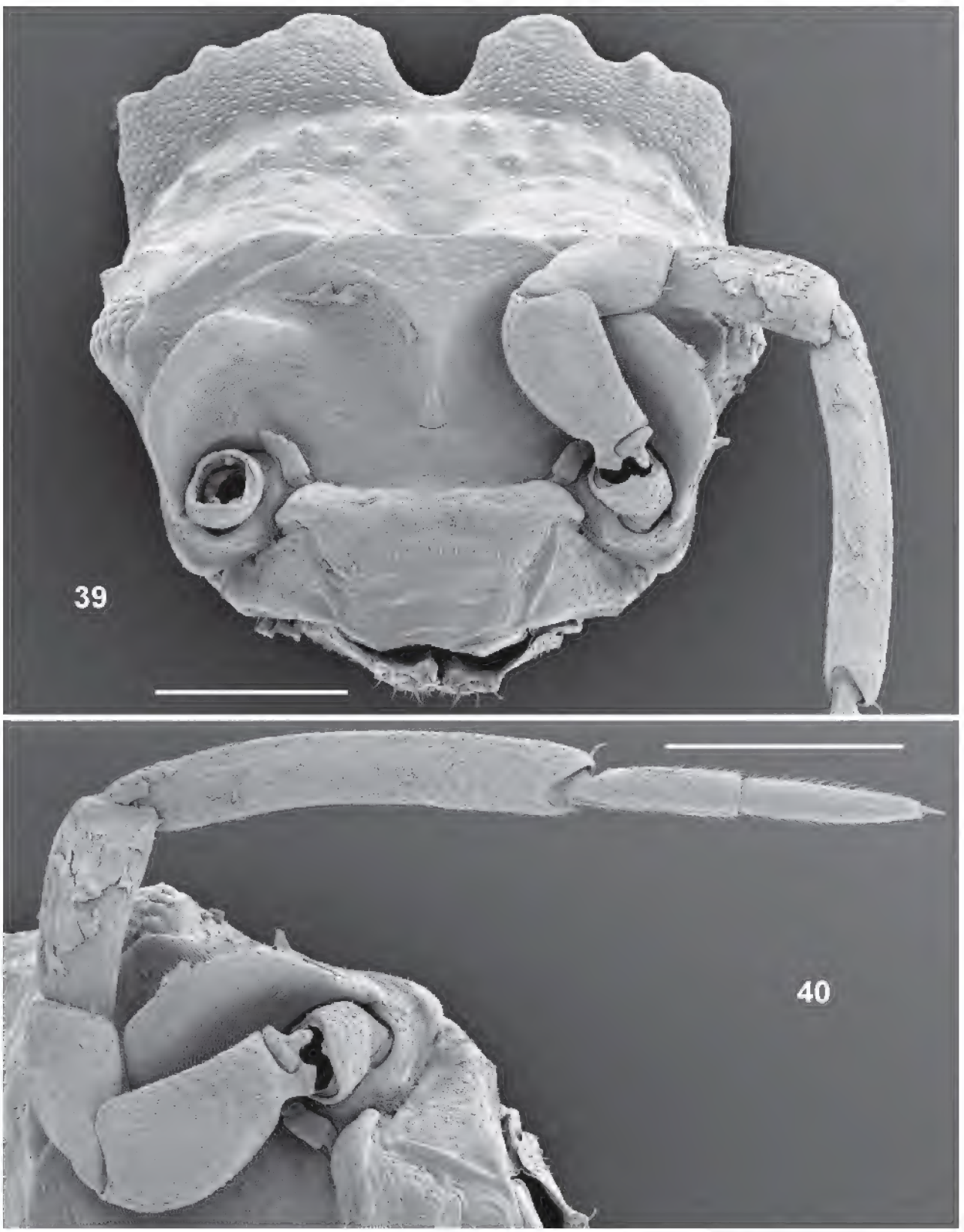
Coloration: Body colour yellowish white, eyes black.

Cuticular structures: Tergites with pronounced tubercles, which are highest on first pereion-tergite (Fig. 37); head caudally with very high tubercles which are fused and form an upright ledge obliquely pointing backwards (Figs. 38, 39).

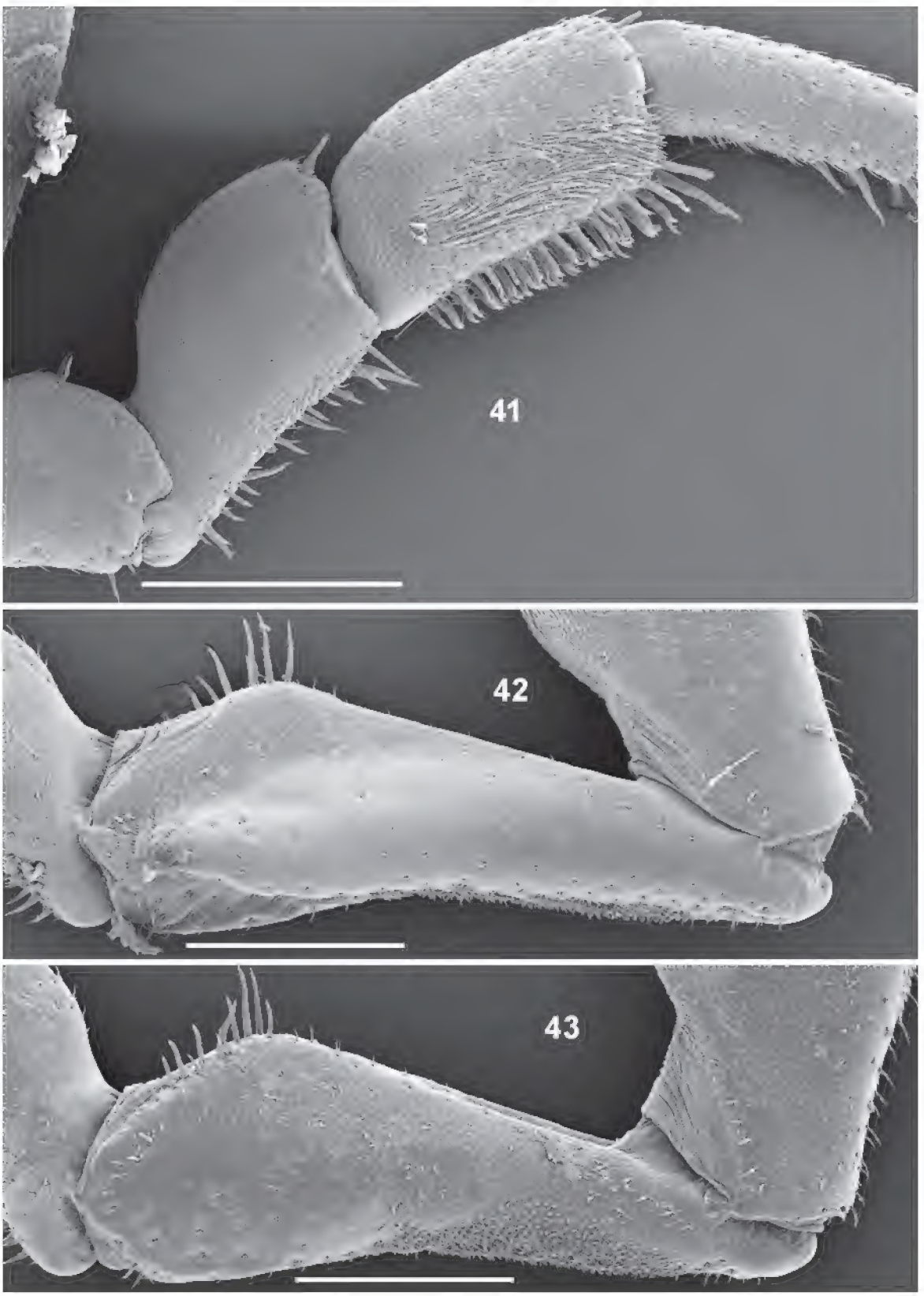
Frontal shield from behind not surpassing frontal margin, upper margin straight (Fig. 38); antennal lobes in frontal view trapezoidal (Fig. 39). Hind margin of pereion-epimeron 1 with flat rounded angle (Fig. 44). Telson slightly wider than long, with straight sides and broadly rounded apex (Fig. 45). Flagellum of antenna with the two segments of equal length (Fig. 40). Male carpus 1 ventrally



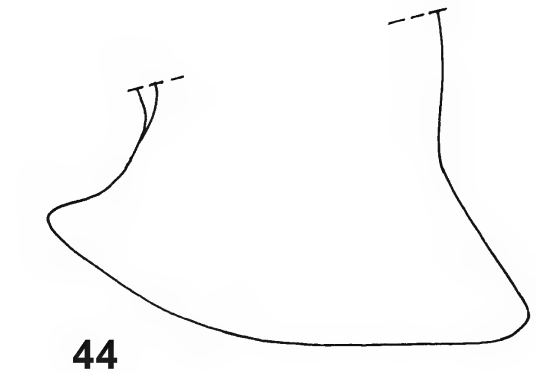
Figs. 37–38. *Armadillidium hauseni* (island Paxí, SMNS T151), ♂, paratype, 10.0 × 4.7 mm. – **37**. Head and pereion-tergite 1, dorsal view. **38**. Head, dorsal view. – Scales: 1 mm.

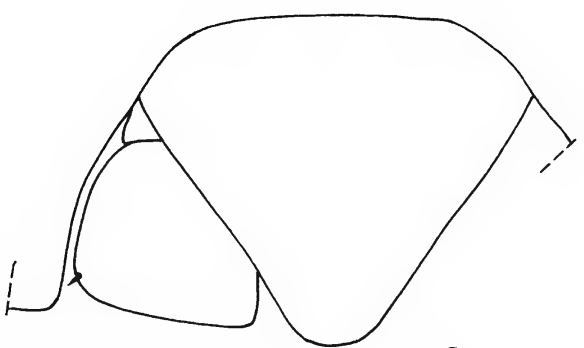


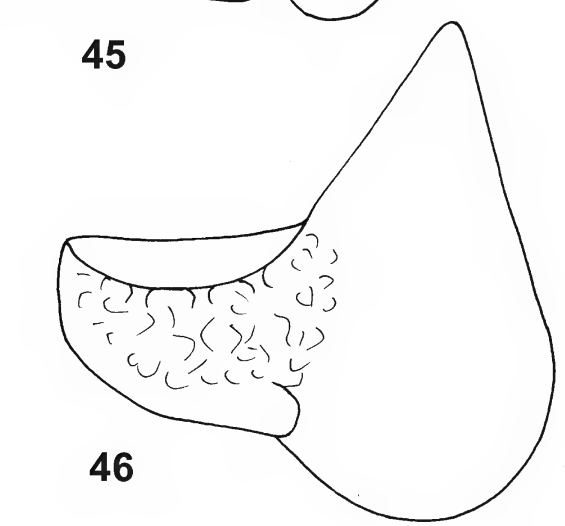
Figs. 39–40. *Armadillidium hauseni* (island Paxí, SMNS T150), ♀, paratype, 14.0 × 7.3 mm. – **39**. Head, frontal view. **40**. Antenna. – Scales: 1 mm.



Figs. 41–43. *Armadillidium hauseni* (island Paxí, SMNS T151), ♂, paratype, 10.0 × 4.7 mm. – **41**. Pereiopod 1, frontal view. **42**. Ischium 7, frontal view. **43**. Ischium 7, caudal view. – Scales: 0.4 mm.







Figs. 44–46. *Armadillidium hauseni* (island Paxí, SMNS T149), ♂, holotype, 12.0 × 5.5 mm. – **44**. Pereion-epimeron 1, lateral view. **45**. Telson and uropod, dorsal view. **46**. Pleopod-exopodite 1, dorsal view.

with brush of setae (Fig. 41). Male ischium 7 ventrally slightly concave, frontal side without distal hair-field, but with a distal crest, caudally with a proximal field of short spiny scales (Figs. 42, 43). Male pleopod-exopodite 1 with acutely pointed hind-lobe (Fig. 46).

Distribution (map Fig. 36)

Greece, Ionian island Paxí.

Remarks

In the genus *Armadillidium* the upright ledge at the posterior margin of the head is unique, but comparably modified tubercles are found in *Stegosauroniscus horridus* Schmölzer, 1974 (family Eubelidae, tropical Africa), in some species of the genus *Coronodillo* Taiti, Paoli & Ferrara, 1998 (family Armadillidae, New Zealand), and in the genus *Hemilepistus* (family Agnaridae, western Asia). The function of this structure in the present species is unknown.

3.12 *Armadillidium humectum* Strouhal, 1937

The species has been treated in the 23rd contribution of this series (Schmalfuss 2006a). It is known from the western part of Greece (Ionian islands, western mainland and northern Peloponnese) and from the southwestern coast of Albania (see also Schmalfuss 2010).

3.13 *Armadillidium jonicum* Strouhal, 1927 (Figs. 47–55, map Fig. 56)

Literature records

Strouhal 1927: 22, figs. 18–22 (Greece, Ionian island Kefalloniá); Strouhal 1936: 66, 100; Strouhal 1937a: 54, figs. 8–9 (Ionian island Lefkáda); Strouhal 1956: 597 (Ionian island Kálamos).

Material examined

Greece: ♂ (lectotype, herewith designated), island Kefalloniá, leg. Werner, IV.1894 (NMW). – 8 ex. (syntypes of *A. j. leucadium*), island Lefkáda (= Levkas), Sívros, leg. Beier, 25.IV.1929 (NMW). – 10 ex., island Itháki, monastery Katharón, 600 m, leg. Hauser, 19.IV.1972 (SMNS 2170). – 1 ex., island Kefalloniá, 1 km W of Póros, *Platanus*, leg. Erhard & Schmalfuss, 27.IV.1996 (SMNS 2540). – 8 ex., island Kefalloniá, 1–3 km NNW of Póros, beach, maquis, leg. Erhard & Schmalfuss, 1.V.1996 (SMNS 2545).

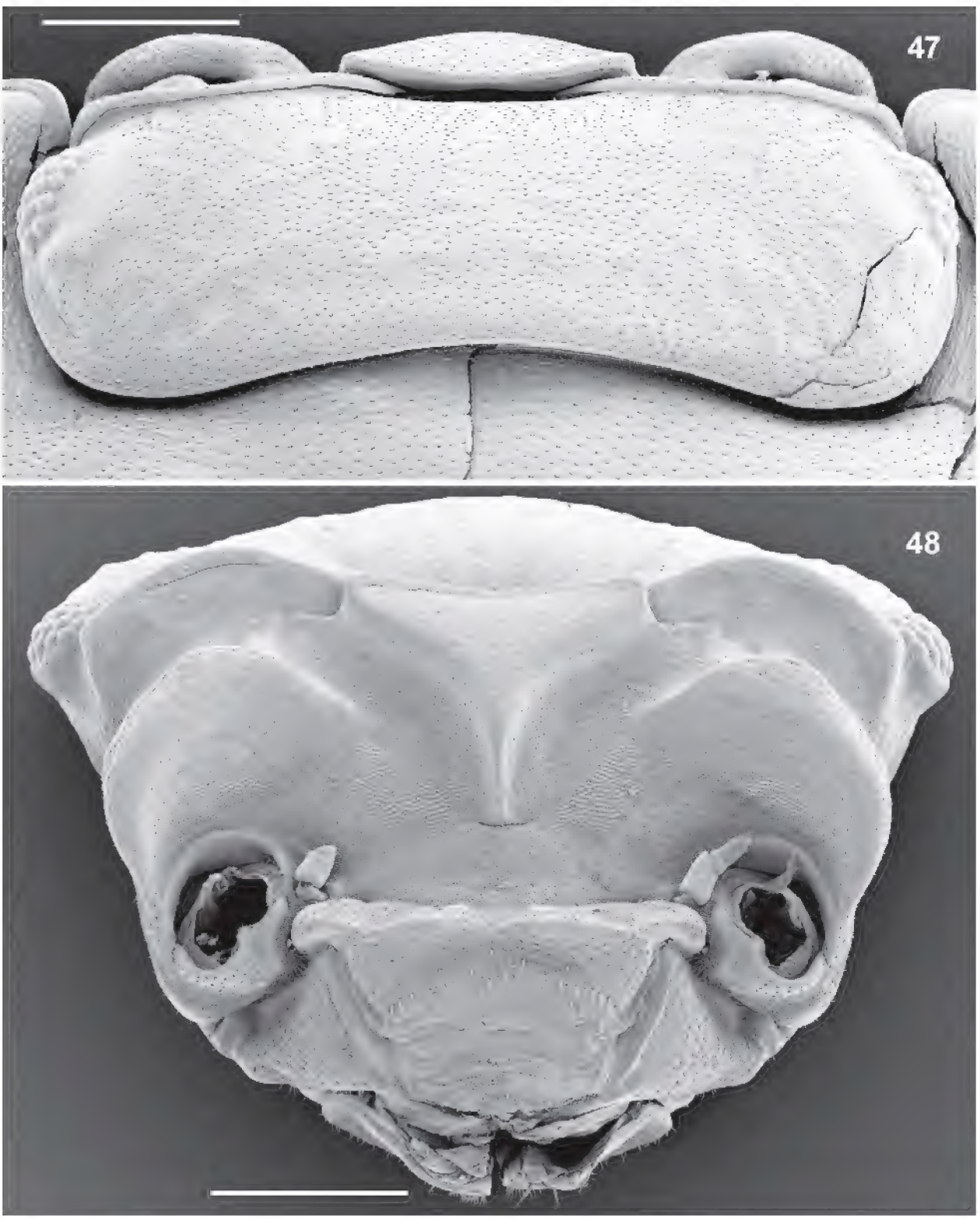
Diagnostic characters

Maximum dimensions: 21.5 × 10.2 mm.

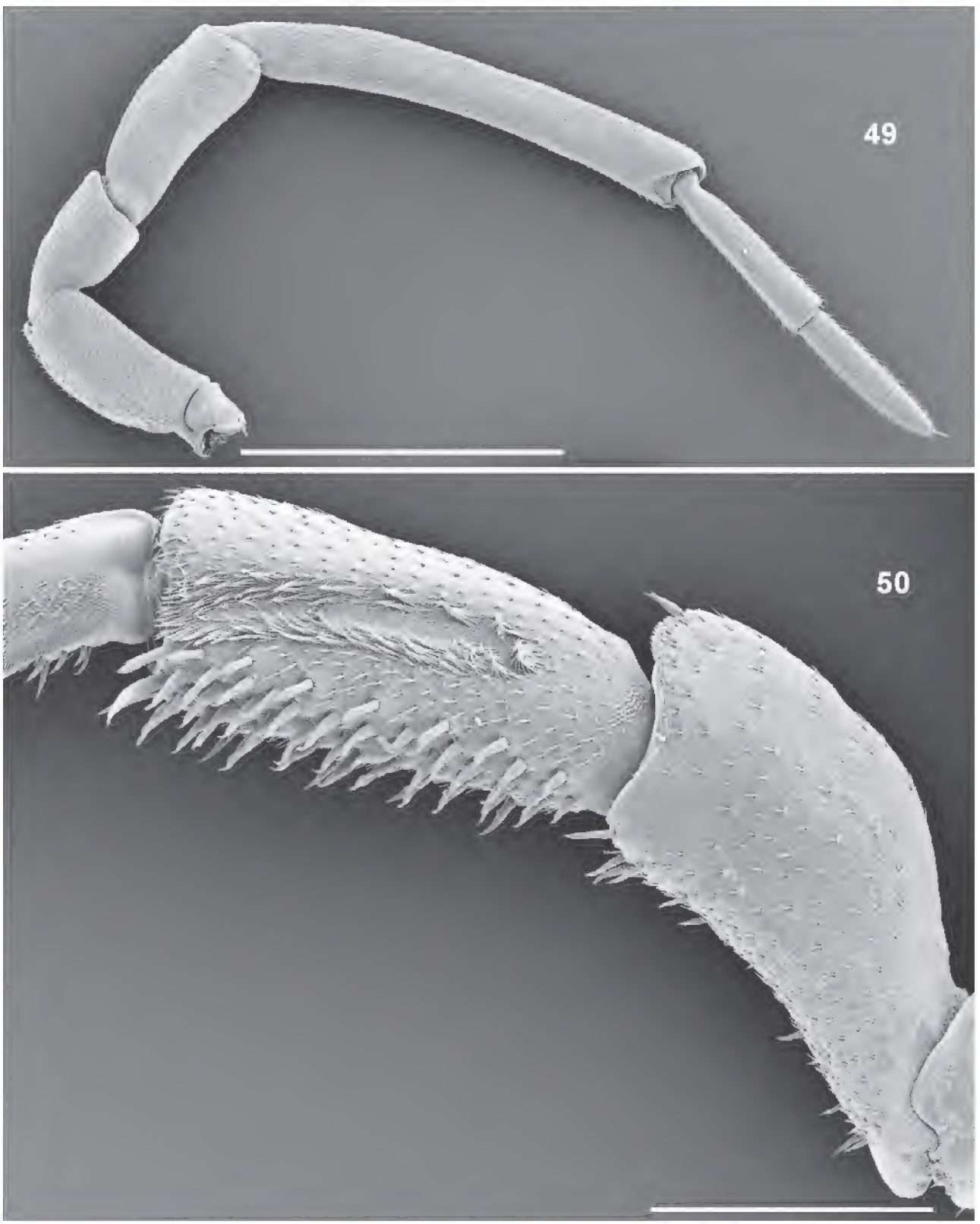
Coloration: Bluish gray, with three conspicuous rows of yellow spots on the pereion-tergites and with yellowish epimera.

Cuticular structures: Tergites with slight granulation.

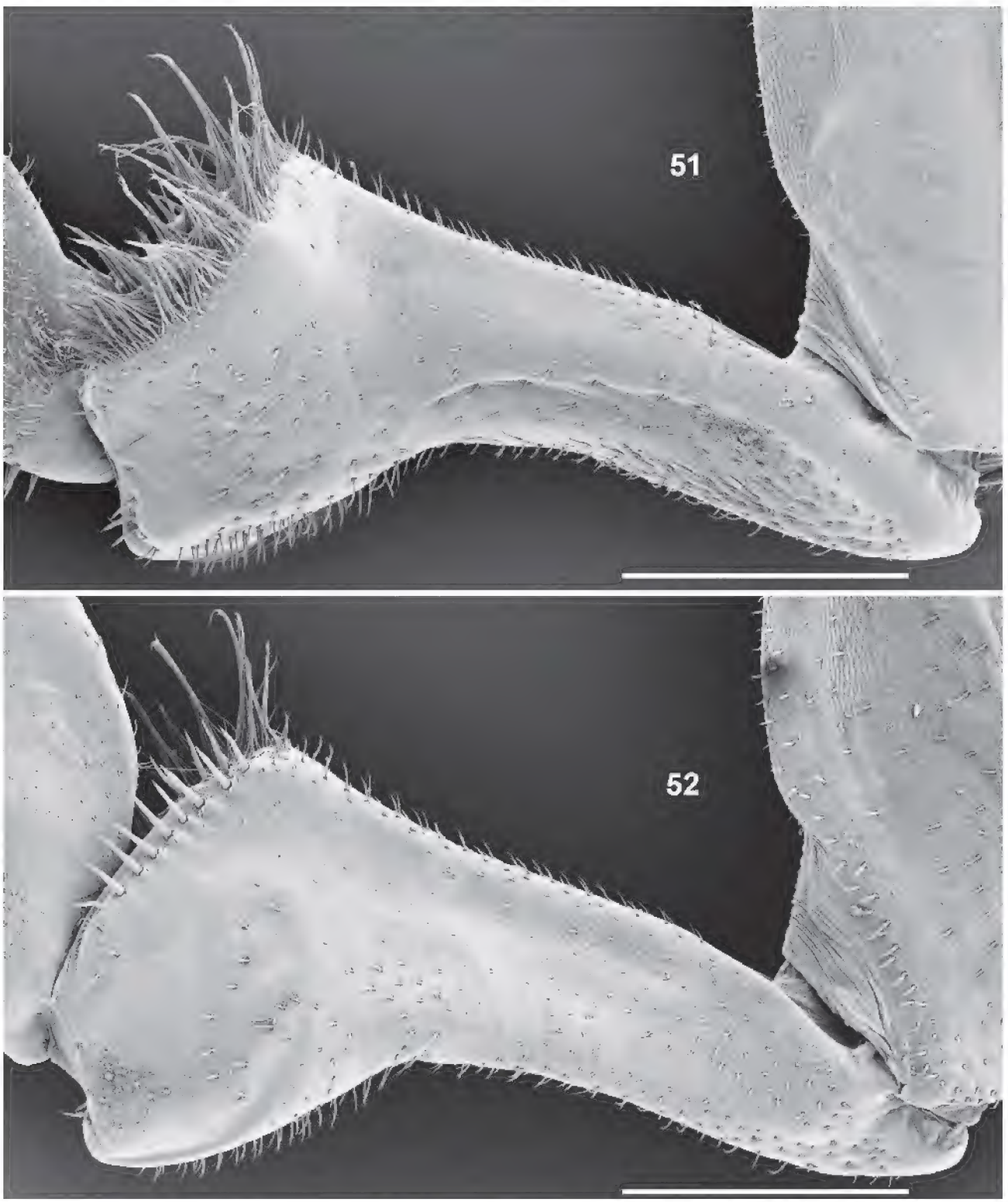
Frontal shield from behind not surpassing frontal margin, upper margin straight, laterally with sharp angles, surface of the triangle in a very oblique angle towards dorsal part of head (Figs. 47, 48); antennal lobes in frontal view trapezoidal (Fig. 48). Hind margin of pereion-epimeron 1 with pronounced pointed angle (Fig. 53). Telson longer than wide, with slightly concave sides and narrowly rounded apex (Fig. 54). Antennal flagellum with distal segment



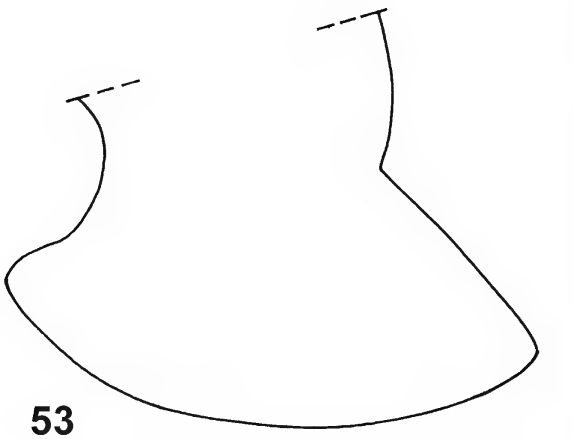
Figs. 47–48. *Armadillidium jonicum* (island Itháki, SMNS 2170). – **47**. ♂, 21.8 × 9.8 mm, head, dorsal view. **48**. ♀, 21.5 × 10.2 mm, head, frontal view. – Scales: 1 mm.

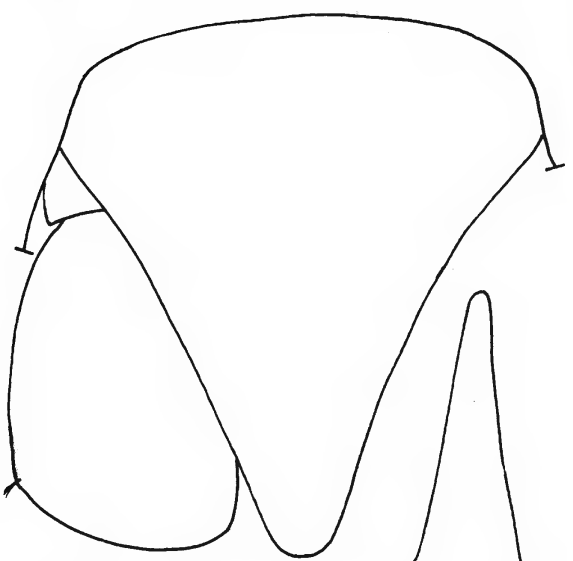


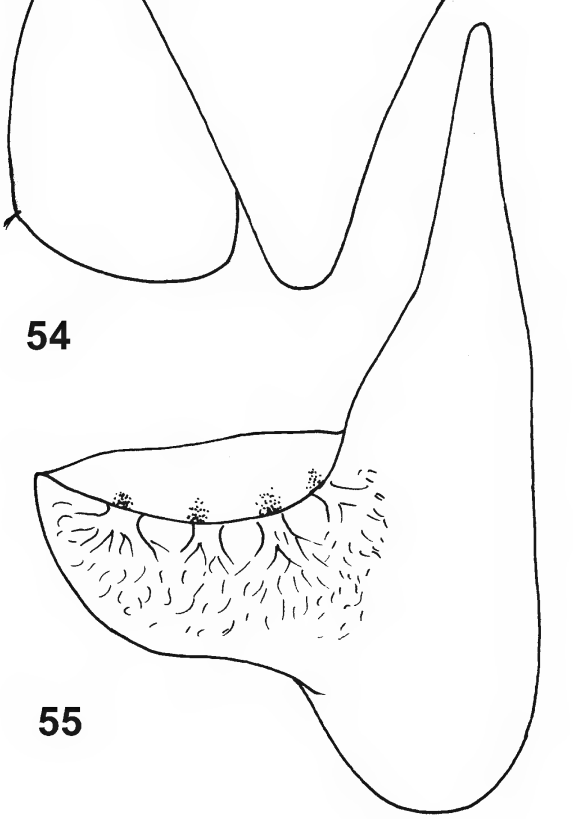
Figs. 49–50. *Armadillidium jonicum* (island Itháki, SMNS 2170), ♂, 21.8 × 9.8 mm. – **49**. Antenna. **50**. Pereiopod 1, frontal view. – Scales: 2 mm (49), 0.7 mm (50).



Figs. 51–52. *Armadillidium jonicum* (island Itháki, SMNS 2170), ♂, 21.8 × 9.8 mm. – **51**. Ischium 7, frontal view. **52**. Ischium 7, caudal view. – Scales: 0.8 mm.







Figs. 53–55. *Armadillidium jonicum* (island Kefalloniá, NMW), ♂, lectotype, 20 mm long. – **53**. Pereion-epimeron 1, lateral view. **54**. Telson and uropod, dorsal view. **55**. Pleopod-exopodite 1, dorsal view.

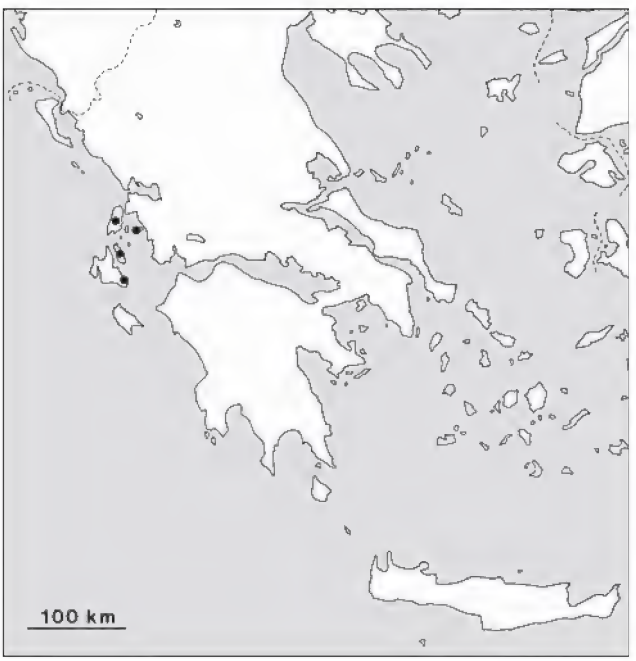


Fig. 56. Records of *Armadillidium jonicum*.

slightly shorter than proximal one (Fig. 49). Male carpus 1 with short brush of setae (Fig. 50). Male ischium 7 ventrally strongly concave, frontally with dense hairy setal comb (Figs. 51, 52). Male pleopod-exopodite 1 with long pointed hind-lobe (Fig. 55).

Distribution (map Fig. 56)

Greece, Ionian islands Lefkáda (= Levkas), Kálamos, Itháki and Kefalloniá.

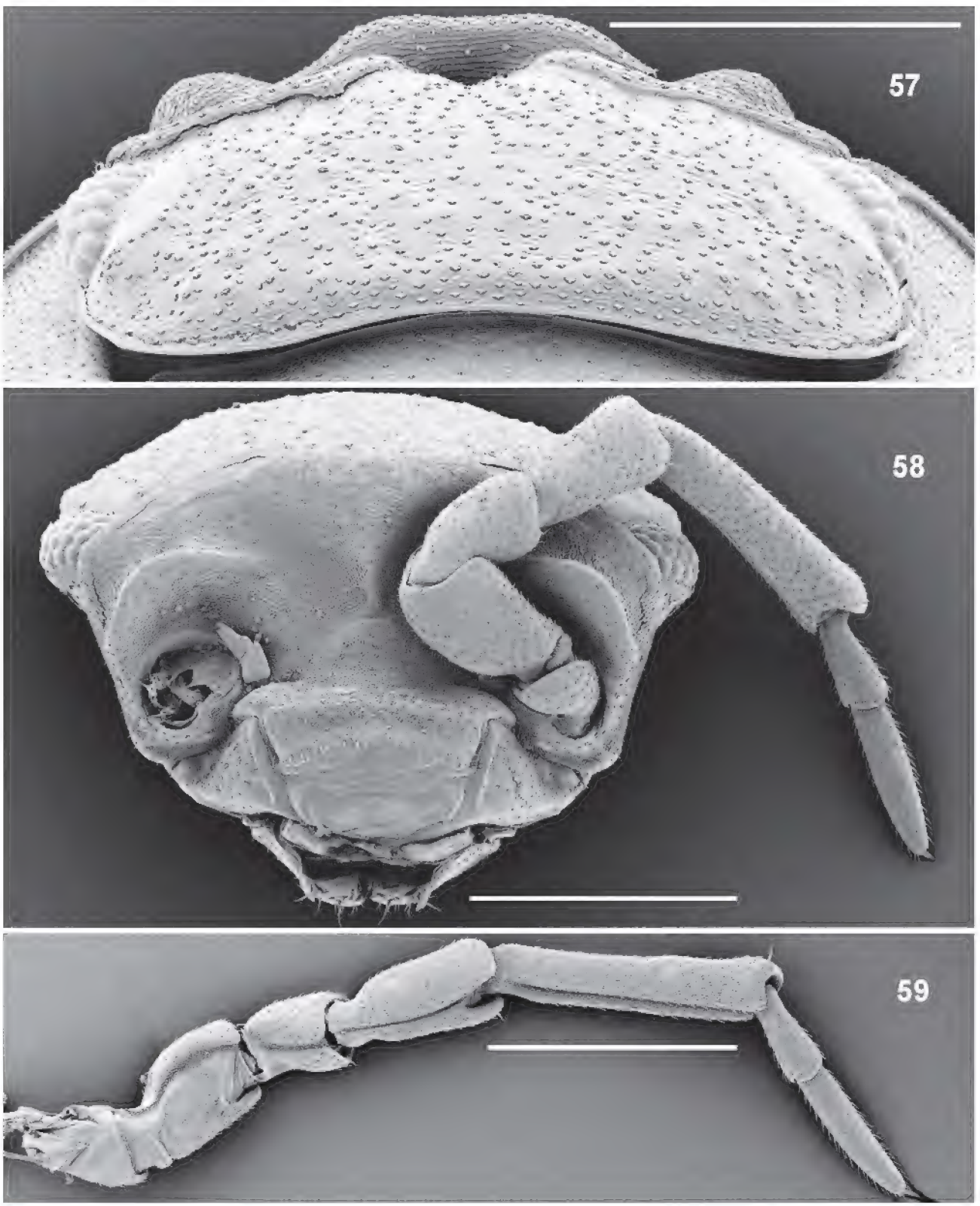
Remarks

Strouhal (1937a, 1956) has described two additional subspecies of *A. jonicum*, *A. j. leucadium* and *A. j. epiroticum*. While the differences of *leucadium* towards the nominate race fall inside the variability spectrum of *Armadillidium* species, the subspecies *epiroticum* shows differences which are used inside the genus for taxa differing on the species level. Therefore I consider *leucadium* only as a variety of *A. jonicum*, while *epiroticum* is treated as a different species (see Schmalfuss 2010).

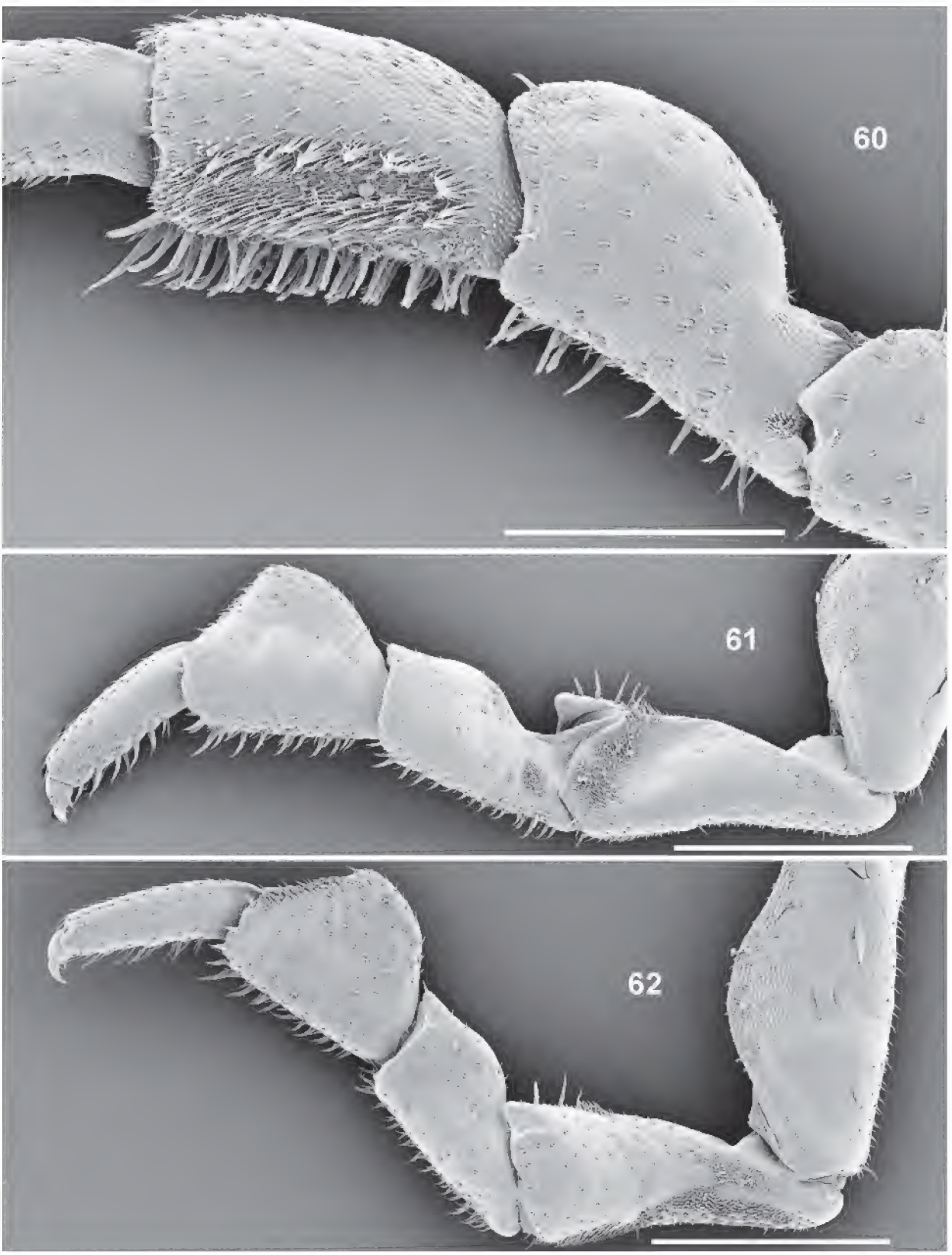
3.14 *Armadillidium justi* Strouhal, 1937
(Figs. 57–65, map Fig. 66)

Literature records

Strouhal 1936: 97 (nomen nudum; Greece, Ionian island Lefkáda); Strouhal 1937a: 48, figs. 3–4 (Ionian island Lefkáda); Strouhal 1956: 591, figs. 9–10 (Ionian islands Lefkáda, Meganísi, Kálamos).



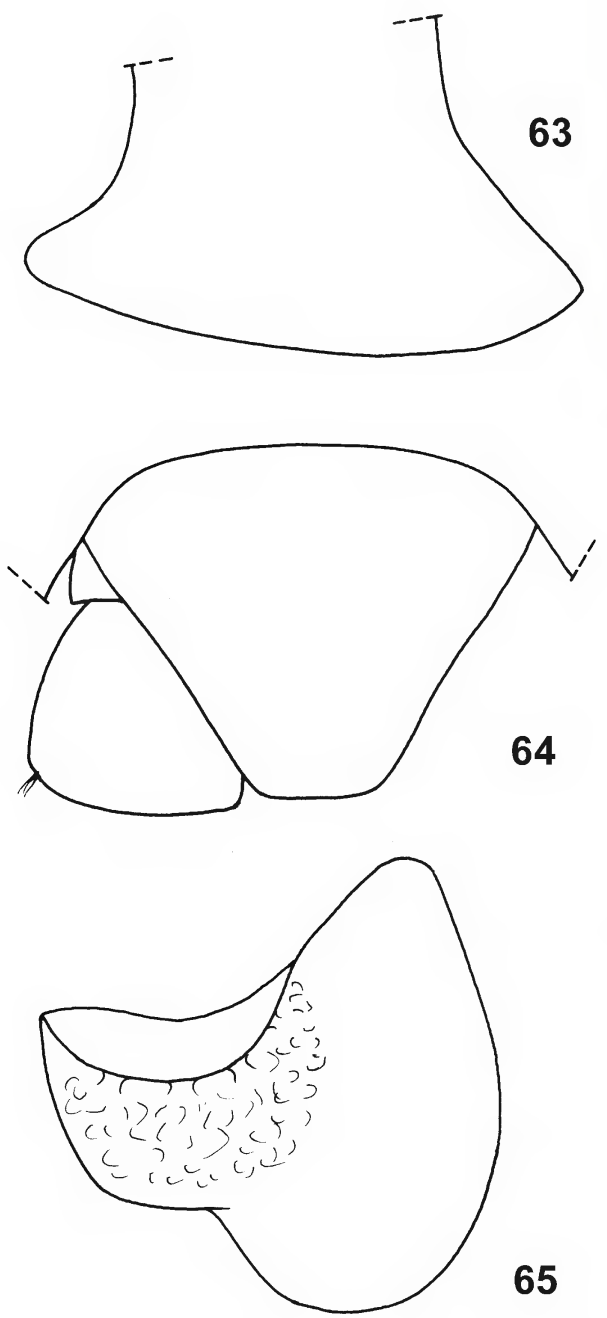
Figs. 57–59. *Armadillidium justi* (island Lefkáda, SMNS 2169). – **57**. ♂, 10.0 × 4.0 mm, head, dorsal view. **58**. ♂, 10.0 × 4.3 mm, head, frontal view. **59**. ♂, 10.0 × 4.0 mm, antenna. – Scales: 1 mm.



Figs. 60–62. *Armadillidium justi* (island Lefkáda, SMNS 2169), ♂, 10.0 × 4.0 mm. – **60**. Pereiopod 1, frontal view. **61**. Pereiopod 7, frontal view. **62**. Pereiopod 7, caudal view. – Scales: 0.4 mm (60), 0.8 mm (61, 62).

Material examined

Greece: ♂ (syntype), island Lefkáda (= Levkas), near town Lefkáda, olive grove, leg. Beier, IV.1929 (NMW). – ♂ (syntype, preparation made by Strouhal), island Lefkáda, Kaligóni, leg. Beier, IV.1929 (NMW). – 3 ex., island Lefkáda, Kaligóni, olive grove, leg. Hauser, 26.III.1971 (SMNS 2169).



Figs. 63–65. *Armadillidium justi* (island Lefkáda, NMW), ♂, syntype, 10 mm long (63, 64) and ♂, syntype, Strouhal's preparation (65). – **63**. Pereion-epimeron 1, lateral view. **64**. Telson and uropod, dorsal view. **65**. Pleopod-exopodite 1, dorsal view.

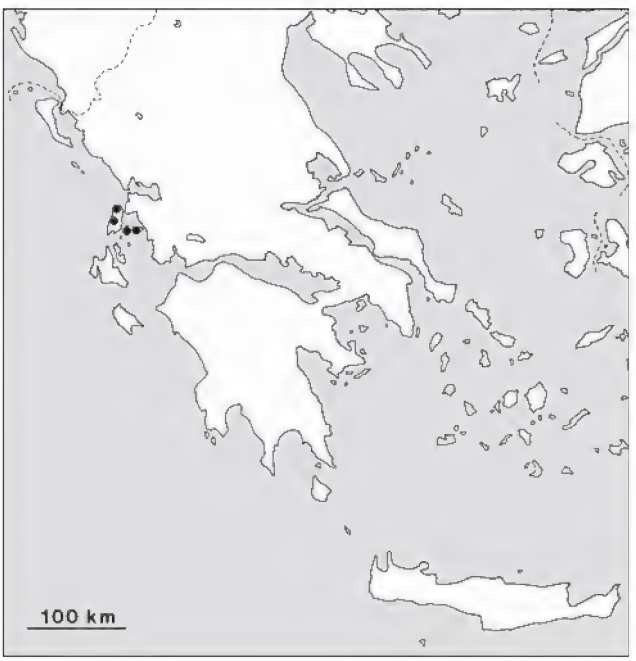


Fig. 66. Records of *Armadillidium justi*.

Diagnostic characters

Maximum dimensions: 12.0 × 5.0 mm (Strouhal 1956).

Coloration: Upper parts light grayish brown, with usual yellowish muscle spots.

Cuticular structures: Tergites slightly granulated.

Frontal shield from behind surpassing frontal margin, upper margin straight (Fig. 57); antennal lobes in frontal view trapezoidal (Fig. 58). Hind margin of pereion-epimeron 1 with completely rounded concavity (Fig. 63). Telson slightly longer than wide, with straight sides and truncate apex (Fig. 64). Flagellum of antenna with proximal segment three fifths of distal one (Figs. 58, 59). Male pereiopod 1 with ventral brush of setae only on carpus (Fig. 60). Male pereiopod 7 with carpus dorsally strongly enlarged, ischium 7 ventrally slightly convex, frontal side with distal hair-field, caudal side with ventral scale areas (Figs. 61, 62). Male pleopod-exopodite 1 with short triangular hind-lobe (Fig. 65).

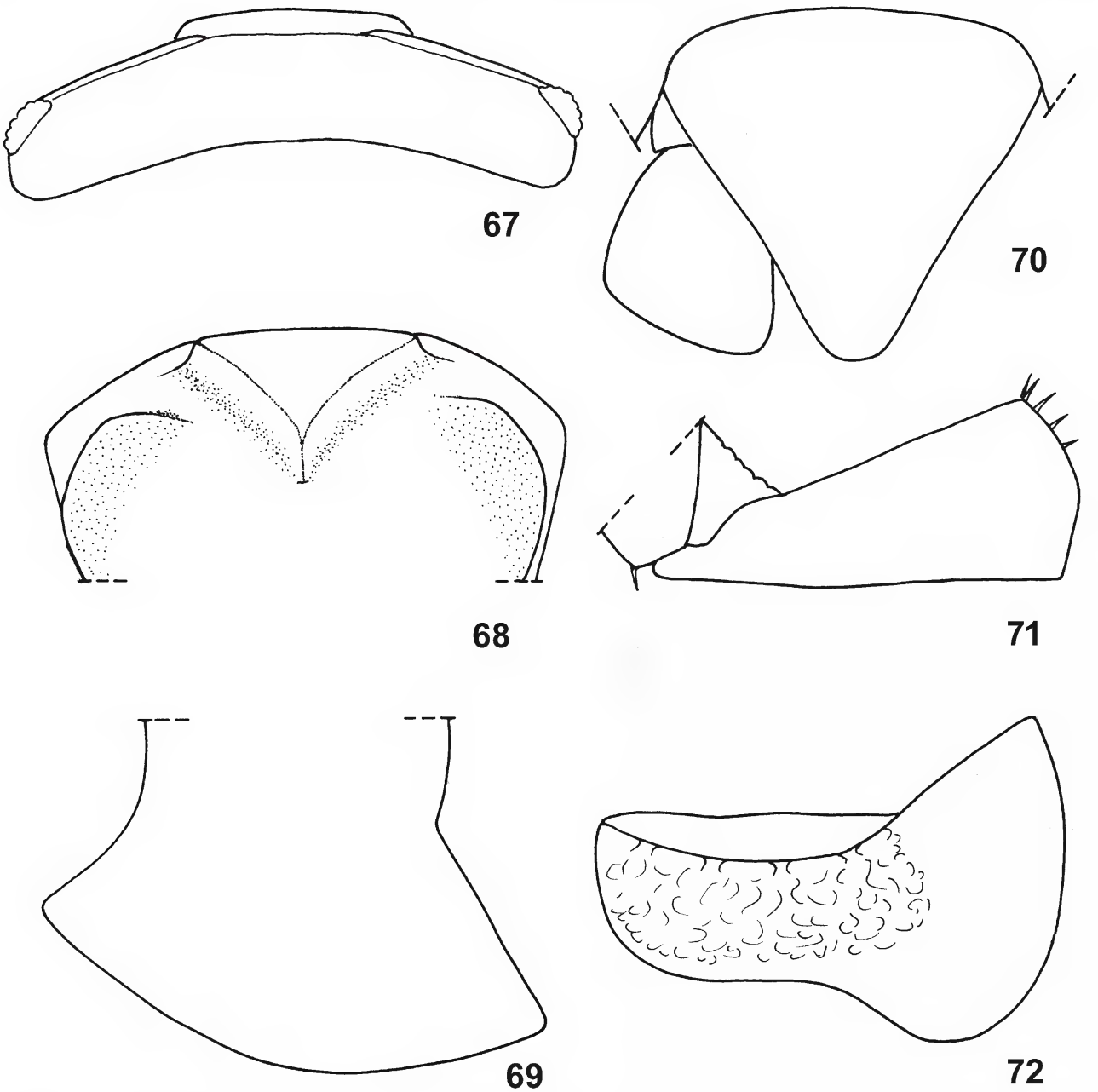
Distribution (map Fig. 66)

Greece, Ionian islands Lefkáda, Meganísi and Kálamos.

3.15 *Armadillidium kalamium* Strouhal, 1956 (Figs. 67–72, map Fig. 73)

Literature records

Strouhal 1942: 149 (nomen nudum; Greece, Ionian island Kálamos); Strouhal 1956: 594, figs. 11–16.



Figs. 67–72. *Armadillidium kalamium* (island Kálamos, NMW), ♂, syntype, 10 mm long. – **67**. Head, dorsal view. **68**. Head, frontal view. **69**. Pereion-epimeron 1, lateral view. **70**. Telson and uropod, dorsal view. **71**. Ischium 7, caudal view. **72**. Pleopod-exopodite 1, dorsal view.

Material examined

Greece: 1 ♂, 1 ♀ and appendage preparations of the two type ♂♂ (syntypes), island Kálamos, olive grove, leg. Beier, 21.V.1933 (NMW).

Diagnostic characters

Maximum dimensions: 17 × 8 mm (Strouhal 1956). The maximum size of the two males of the type series is 11.6 × 5.5 mm.

Coloration: Bluish gray, margins of tergites lighter (Strouhal 1956).

Cuticular structures: Tergites very slightly granulated.

Frontal shield from behind slightly surpassing frontal margin, upper margin straight (Fig. 67); antennal lobes in frontal view nearly semicircular (Fig. 68). Hind margin of pereion-epimeron 1 with acute angle (Fig. 69). Telson slightly shorter than wide, with straight sides and rounded apex (Fig. 70). Male ischium 7 ventrally straight (Fig. 71).

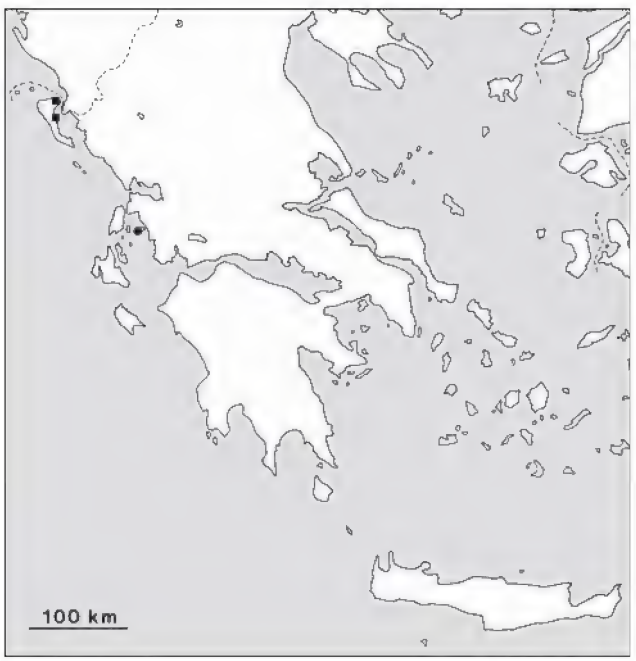


Fig. 73. Records of *Armadillidium kalamium* (●) and *A. simile* (■).

Male pleopod-exopodite 1 very wide, with short triangular hind-lobe (Fig. 72, compare Remarks below).

Distribution (map Fig. 73)

Greece, Ionian island Kálamos. The species can be expected also from the very close coast of the adjacent mainland.

Remarks

The species is only known from the type series. The appendages of the two male type specimens are mixed up in two appendage preparations, therefore no lectotype is designated. The male type specimens seem to be immature, the ischium 7 and the pleopod-exopodite 1 show a female morphology, probably the specimens have not yet developed the adult male morphology of these appendages. Future collection of adult males from Kálamos should clarify this question.

3.16 *Armadillidium marmoratum* Strouhal, 1929

This species was treated in the 23rd contribution of this series (Schmalfuss 2006a). It is known from western Turkey (Aegean and Black Sea coasts), Cyprus, Israel, Egypt, and in Greece from the Ionian island Lefkáda, the Peloponnese, the Aegean islands and the northern Aegean coast.

3.17 *Armadillidium pallasii* Brandt, 1833 (Figs. 74–83, map Fig. 84)

Synonyms: *Armadillidium frontesignum*, *A. frontirostre*, *A. frontisignum*, *A. pallasii frontirostre*, *A. pallasii garganum*.

Literature records

Brandt 1833: 185 (?Ukraine, "Taurica Chersonesus?"); all subsequent records of the species (see Schmalfuss 2003 under *A. frontirostre*) should be reinvestigated concerning identification and doubtful records which is, however, outside the scope of the present publication.

Material examined

?Ukraine: 3 ex. (♂, lectotype, herewith designated in order to fix the name-bearing type, and 1 ♂, 1 ♀, paralectotypes), "Taurica Chersonesus?" (= Crimea) (Berlin, Brandt 1833, compare Remarks below).

Italy: 2 ex., peninsula Gargano, Peschici, leg. Ammermann, 10.VI.1971 (SMNS 7010). – 3 ex., peninsula Gargano, NE of Monte Sant'Angelo, leg. Bils, 1976 (SMNS 7030). – 3 ex., peninsula Gargano, Vieste, leg. Schmalfuss, 10.VII.1988 (SMNS 7306).

Croatia: 8 ex., "Istrien", leg. Verhoeff, 1901 (SMNS 5063). – 6 ex., island Krk, N of Krk, coast, leg. Schawaller, 13.VIII.1999 (SMNS 5520). – 12 ex., island Cres, leg. Grabert, VI.1986, VI.2000, IV.2001, IV.2002 (SMNS 5129, 5522, 5523, 5527). – 15 ex., island Lošinj, northern tip, leg. Schmalfuss, VIII.1969 (SMNS 5011). – 1 ex., island Susak, leg. Strubelt, 9.IX.1972 (SMNS 5028). – 2 ex., island Pag, Novalja, oak forest, leg. Schmalfuss, 9.VIII.1970 (SMNS 5021). – 8 ex., beach N of Biograd, leg. Schmalfuss 25.V.1969 (SMNS 5003). – 15 ex., Split, Biological Station, leg. Rieger, IV.1970, and leg. R. Grimm, III.1972 (SMNS 5004, 5040). – 2 ex., mouth of Neretva near Ploče, leg. Schmalfuss, 26.V.1969 (SMNS 5000).

Greece: 2 ex., island Kérkira, Mirtiótissa, leg. Oliver, IV.1982 (SMNS 1459).

Bulgaria: 3 ex., Sozopol, leg. V. Haas, 15.VIII.1971 (SMNS 5438).

NW-Turkey: 34 ex., Black Sea coast, Amasra, leg. Kohler, VIII.1973 (SMNS 11003).

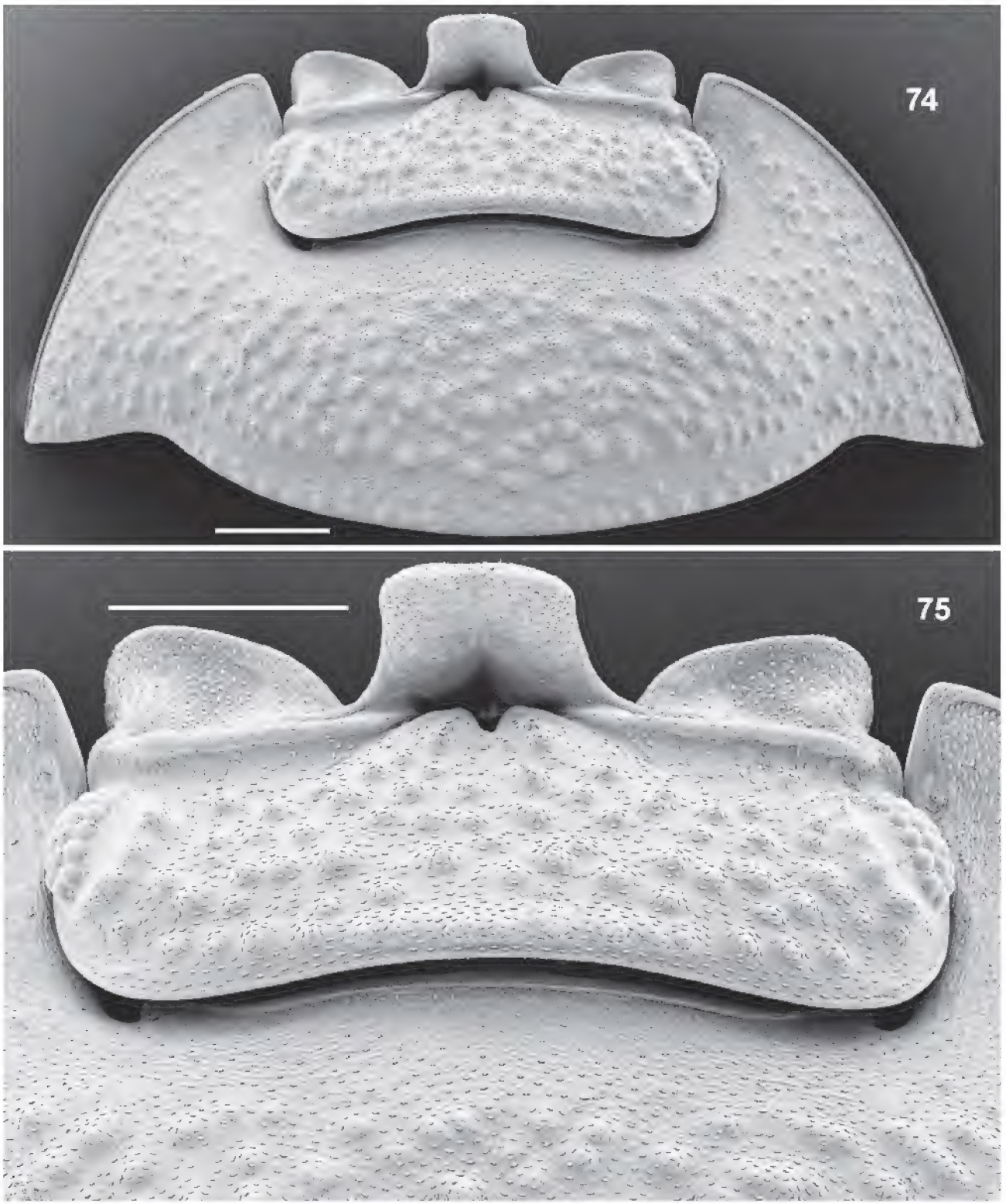
Diagnostic characters

Maximum dimensions: 21.5 × 9.5 mm.

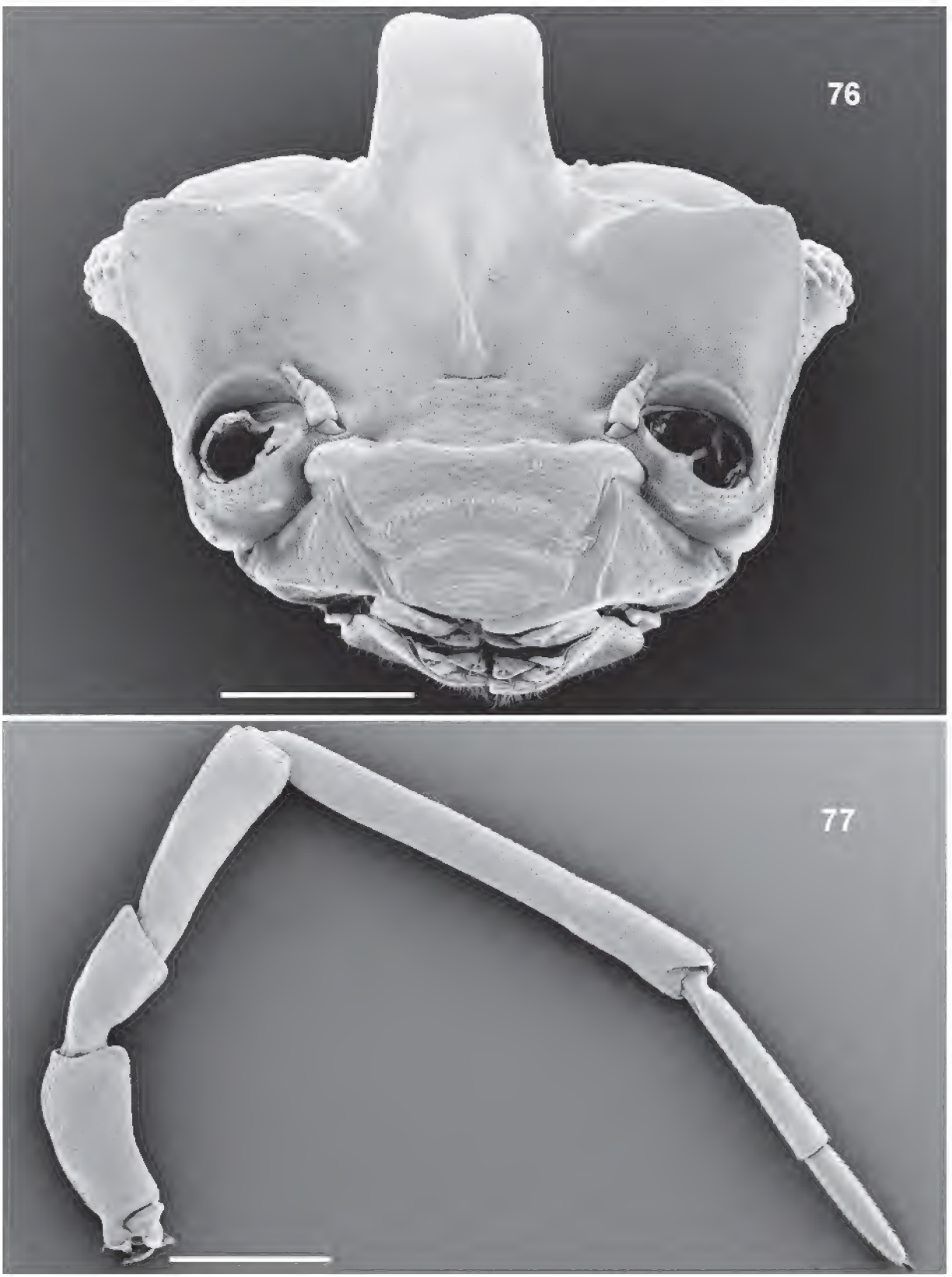
Coloration: Gray to blackish gray, with inconspicuous muscle-spots.

Cuticular structures: Tergites with pronounced tuberculation (Fig. 74).

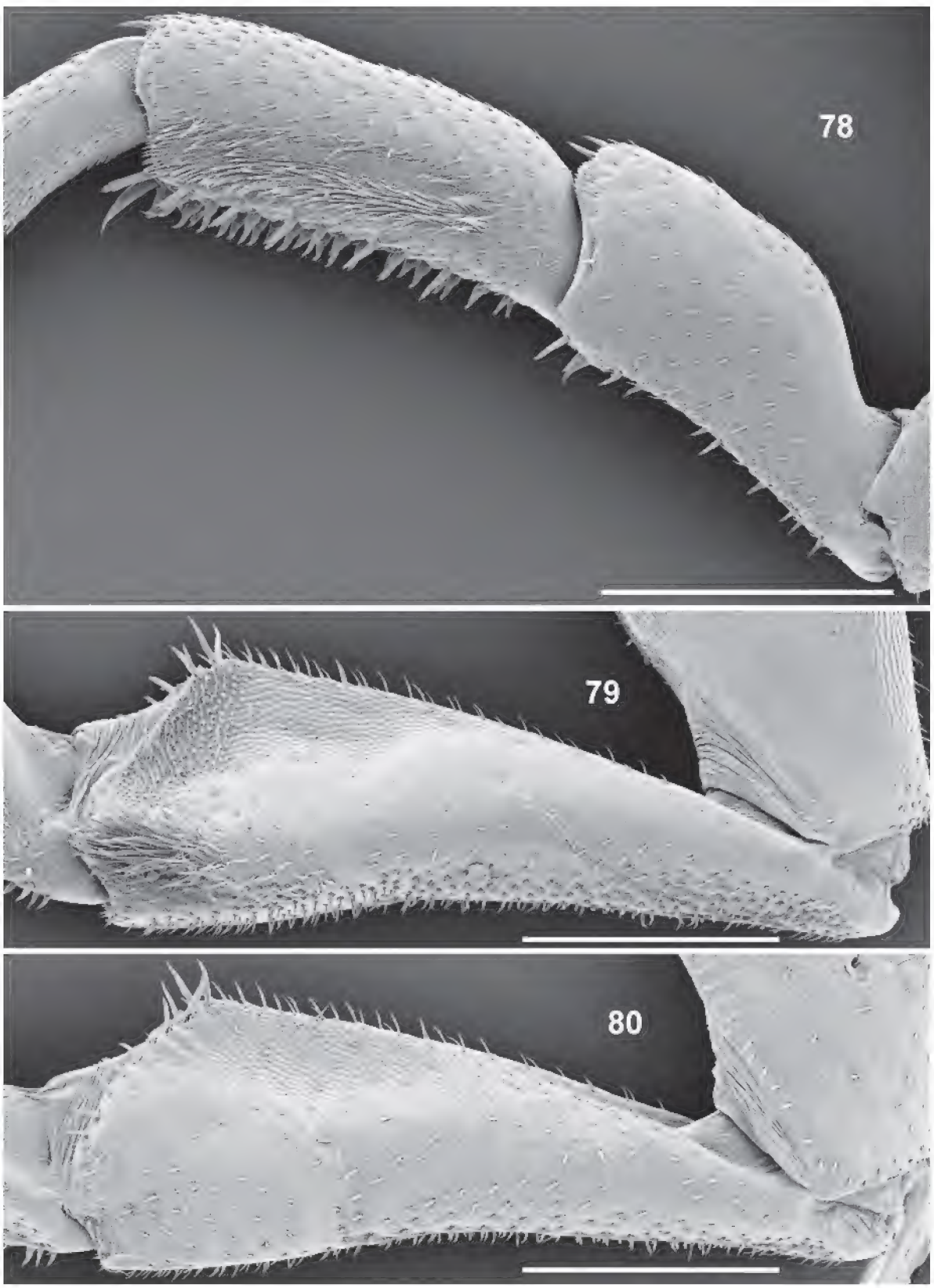
Frontal shield narrow, from behind as high as it is wide, dorsal margin not wider than the middle part (in contrast to *A. peraccae*), with rounded angles laterally, caudally with conspicuous groove (Fig. 75); antennal lobes in frontal view triangular (Fig. 76). Hind margin of pereion-epimeron 1 with rounded angle (Fig. 81). Telson clearly longer than wide, with nearly straight sides and broadly rounded apex (Fig. 82). Antenna see Fig. 77, distal segment of flagellum one third shorter than proximal one. Male carpus 1 with brush of short setae (Fig. 78). Male ischium 7 ventrally very slightly concave, frontally



Figs. 74–75. *Armadillidium pallasii* (island Kérkira, SMNS 1459), ♀, 17.0 × 7.7 mm. – **74**. Head and pereion-tergite 1, dorsal view. **75**. Head, dorsal view. – Scales: 1 mm.

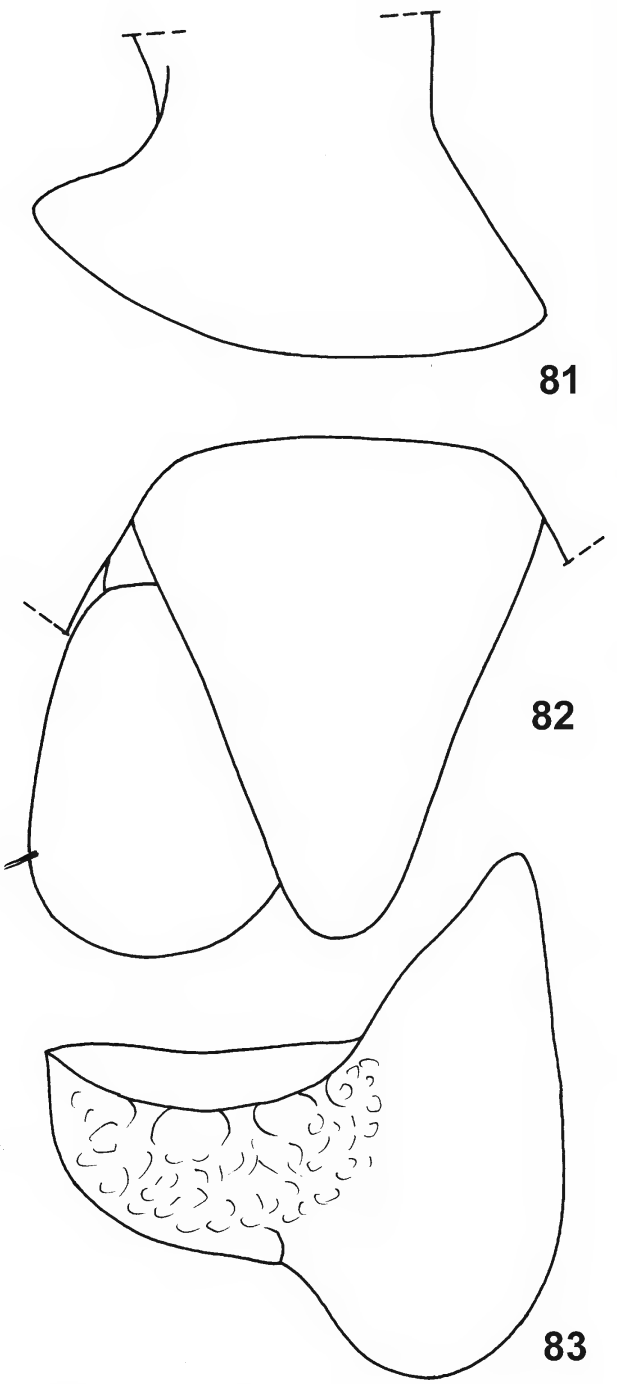


Figs. 76–77. *Armadillidium pallasii* (island Kérkira, SMNS 1459), ♂, 18.3 × 8.0 mm. – **76**. Head, frontal view. **77**. Antenna. – Scales: 1 mm.



Figs. 78–80. *Armadillidium pallasii* (island Kérkira, SMNS 1459), ♂, 18.3 × 8.0 mm. – **78**. Pereiopod 1, frontal view. **79**. Ischium 7, frontal view. **80**. Ischium 7, caudal view. – Scales: 0.7 mm.

with distal field of short spiny setae in the dorsal part and a dense brush of long hairy setae in the ventral part (Figs. 79, 80), in contrast to *A. peraccae*, which has only a normal setal field in the dorsal part (compare SCHMALFUSS 2006a:



Figs. 81–83. *Armadillidium pallasii* (island Kérkira, SMNS 1459), ♂, 18.3 × 8.0 mm. – **81**. Pereion-epimeron 1, lateral view. **82**. Telson and uropod, dorsal view. **83**. Pleopod-exopodite 1, dorsal view.

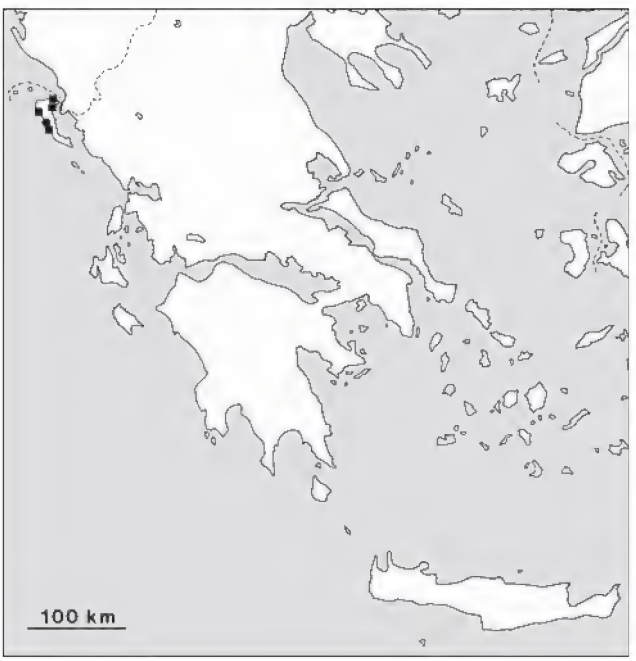


Fig. 84. Greek records of *Armadillidium pallasii* (●) and *A. werneri* (■).

fig. 94). Male pleopod-exopodite 1 with triangular hindlobe (Fig. 83), forming an obtuse angle with the respiratory field, in contrast to *A. peraccae* (compare SCHMALFUSS 2006a: fig. 96).

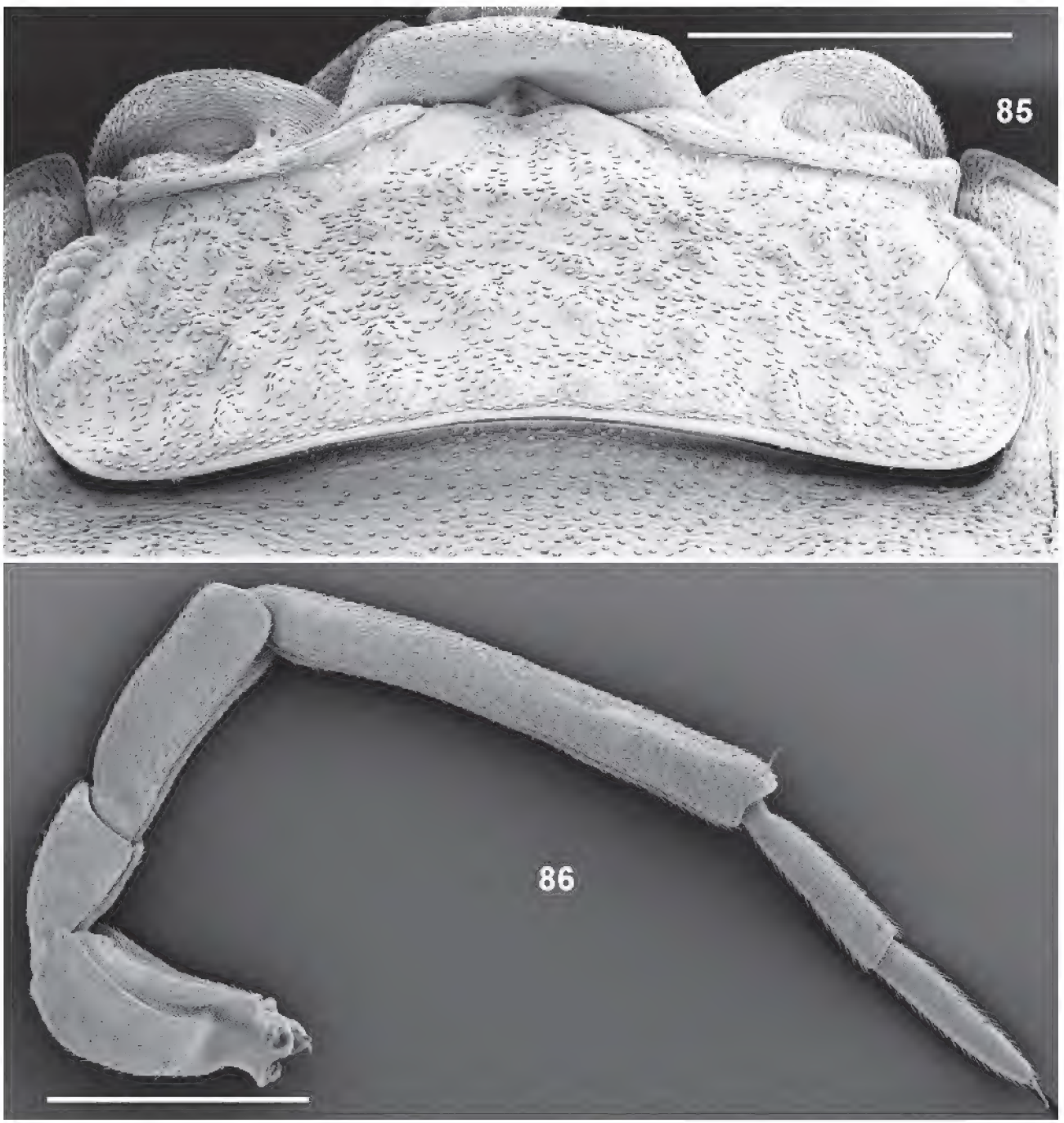
Distribution (map Fig. 84)

Eastern coast of Italy, Dalmatian coast and islands down to Greek island Kérkira, coasts of the Marmara Sea, Turkish and Bulgarian coast of Black Sea, ?Crimea.

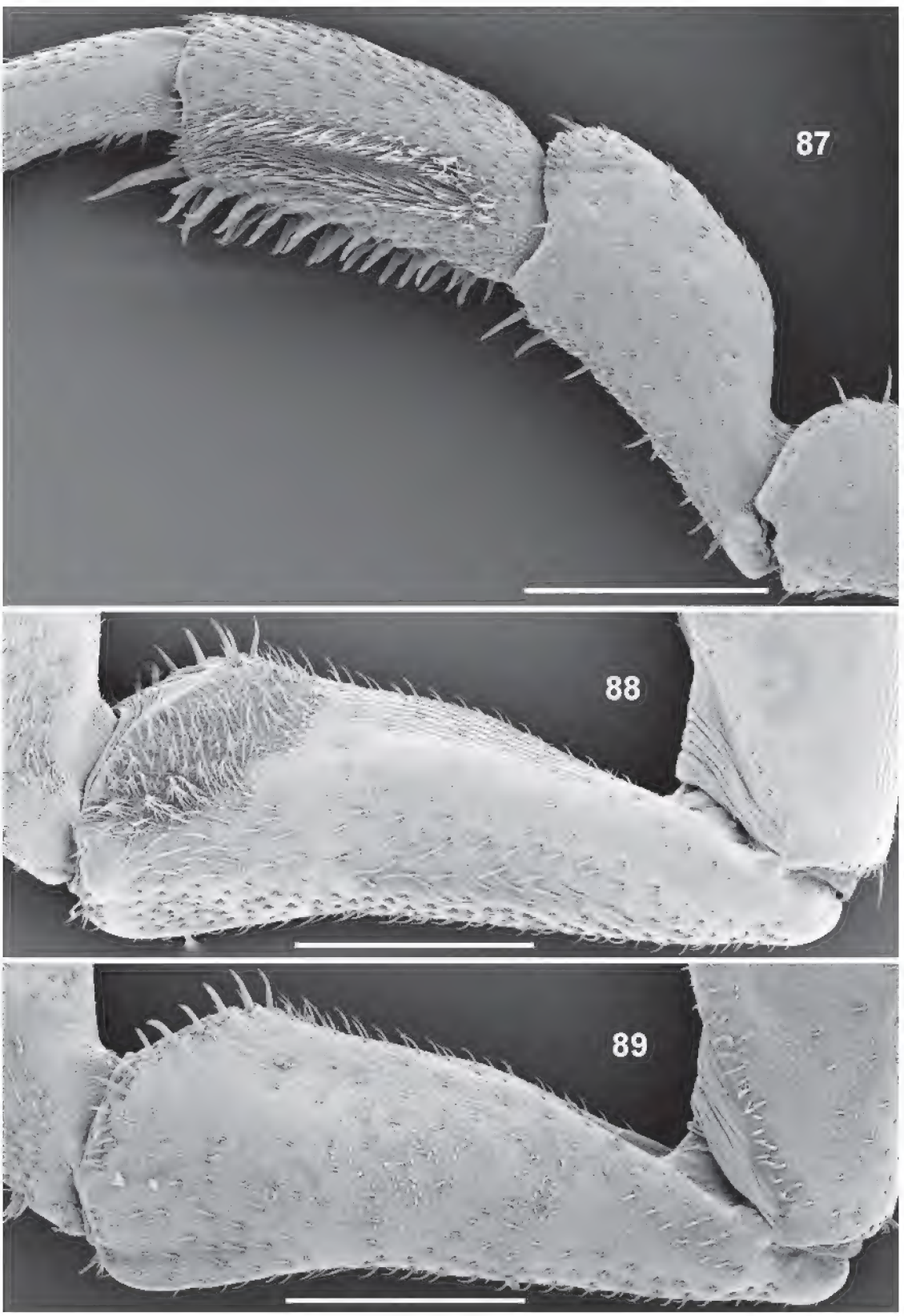
Remarks

The type specimens of *A. pallasii*, which I had the opportunity to investigate, show that *frontirostre*, *frontisignum* and *pallasii garganum* are synonyms of *pallasii*. In contrast, *A. peraccae* is here considered a separate species (SCHMALFUSS 2006b), although the strange mosaic distribution pattern of the two species cannot be explained at the present state of knowledge. BRANDT (1933: 185) gives the type locality "Taurica Chersonesus?" (= Crimea). The question mark indicates that it may be a labeling error, the type specimens are very similar to specimens from the Dalmatian coast. Nevertheless, the specimens from the Black Sea coast mentioned above (Bulgaria, Turkey) do not differ from the Dalmatian samples. New collections from the Crimea could help to solve this problem.

A. pallasii is a member of the *A. nasatum*-group, with the frontal shield morphology and the shape of telson and uropods as common derived characters (synapomorphies).



Figs. 85–86. *Armadillidium simile* (island Kérkira, SMNS 1531), ♂, 14.3 × 6.2 mm. – **85**. Head, dorsal view. **86**. Antenna. – Scales: 1 mm.



Figs. 87–89. *Armadillidium simile* (island Kérkira, SMNS 1531), ♂, 14.3 × 6.2 mm. – **87**. Pereiopod 1, frontal view. **88**. Ischium 7, frontal view. **89**. Ischium 7, caudal view. – Scales: 0.5 mm.

3.18 *Armadillidium peloponnesiacum* Verhoeff, 1901

This species was treated in the 23rd contribution of this series (Schmalfuss 2006a). It is known from western, central and southern Greece. In the Ionian islands it has been found on Lefkáda, Kefalloniá and Zákinthos.

3.19 *Armadillidium simile* Strouhal, 1937
(Figs. 85–93, map Fig. 73)

Literature records

Strouhal 1936: 100 (nomen nudum, Greece, Ionian island Kérkira); Strouhal 1937a: 52, figs. 5–7 (Ionian island Kérkira); Strouhal 1966: 298, pl. 6, figs. 29–33 (Ionian island Kérkira).

Material examined

Greece: 1 ♀ and appendage preparations of a ♂, 9.2 mm long, island Kérkira, Kassiópi, olive grove, leg. Hauser, 20.IV.1960 (NMW, Strouhal 1966). – 1 ♂, island Kérkira, near Lútses, leg. Hauser, 12.IV.1972 (SMNS 1531).

Diagnostic characters

Maximum dimensions: 14.3 × 6.2 mm.

Coloration: Tergal parts light grayish brown.

Cuticular structures: Tergites tuberculated.

Frontal shield from behind surpassing frontal margin, upper margin straight, laterally with obtuse angles (Fig. 85); antennal lobes in frontal view trapezoidal (Fig. 90). Hind margin of pereion-epimeron 1 with sharp angle (Fig. 91). Telson slightly longer than wide, with straight sides and truncate apex (Fig. 92). Flagellum of antenna with segments of equal length (Fig. 86). Male pereiopod 1 with ventral brush of setae only on carpus (Fig. 87). Male ischium 7 ventrally very slightly convex, frontal side with distal hair-field (Figs. 88, 89). Male pleopod-exopodite 1 with triangular hind-lobe, medial margin slightly concave (Fig. 93).

Distribution (map Fig. 73)

Greece, Ionian island Kérkira (= Corfu).

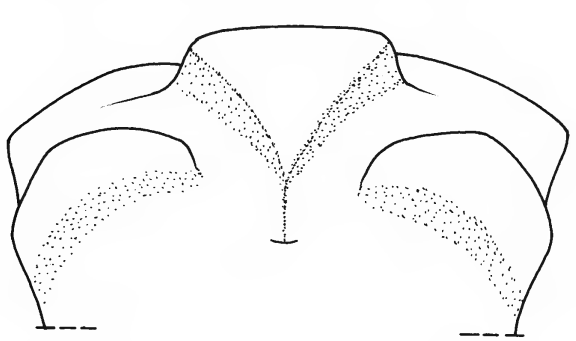
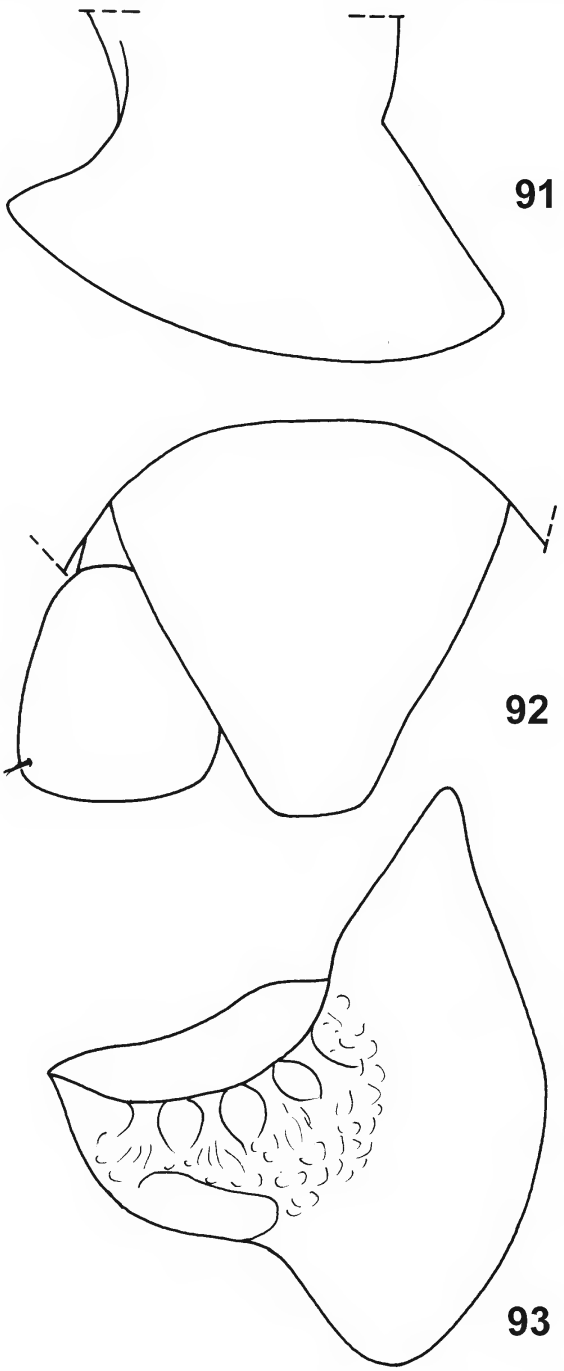


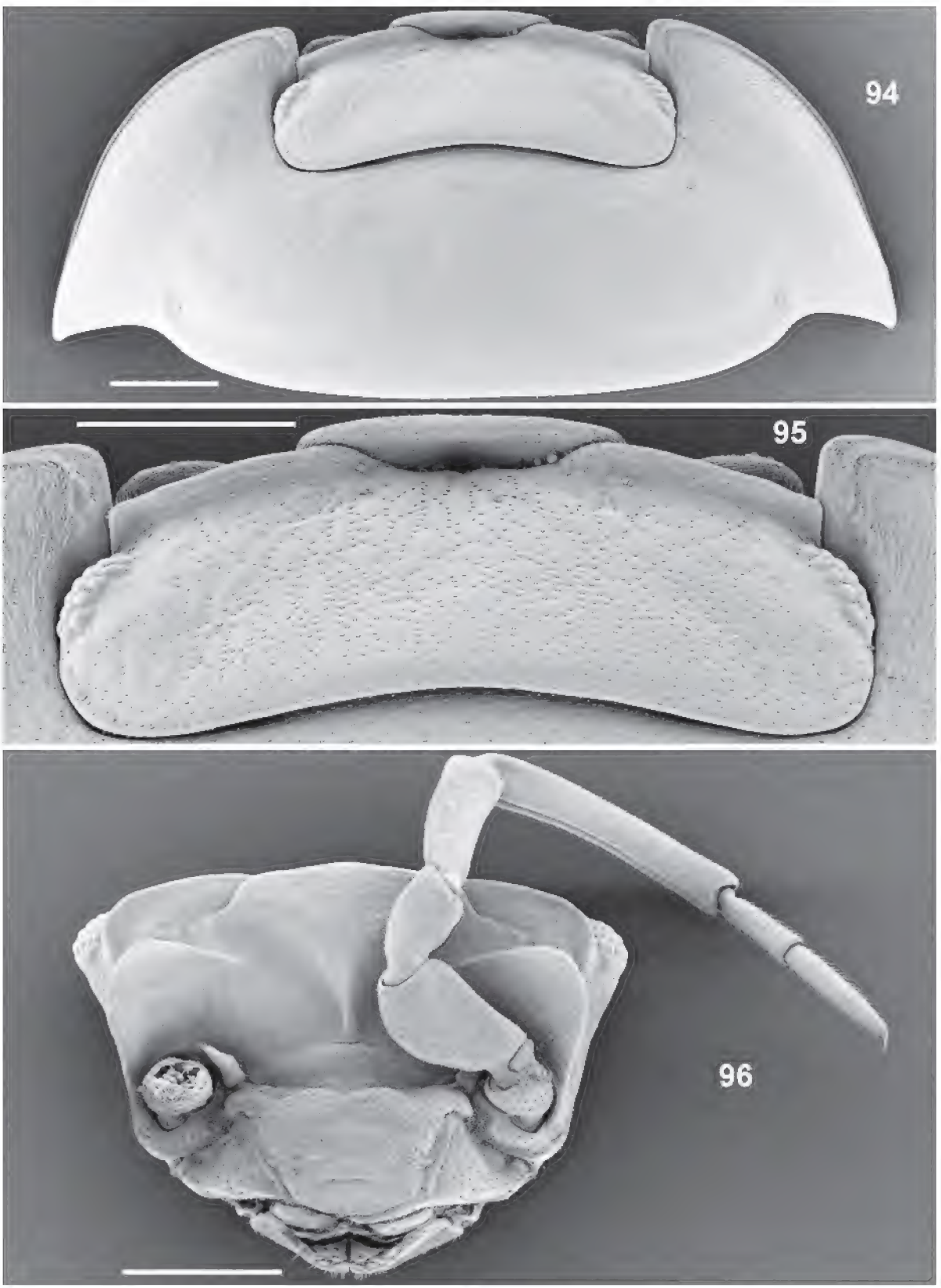
Fig. 90. *Armadillidium simile* (island Kérkira, SMNS 1531), ♂, 14.3 × 6.2 mm, head, frontal view.



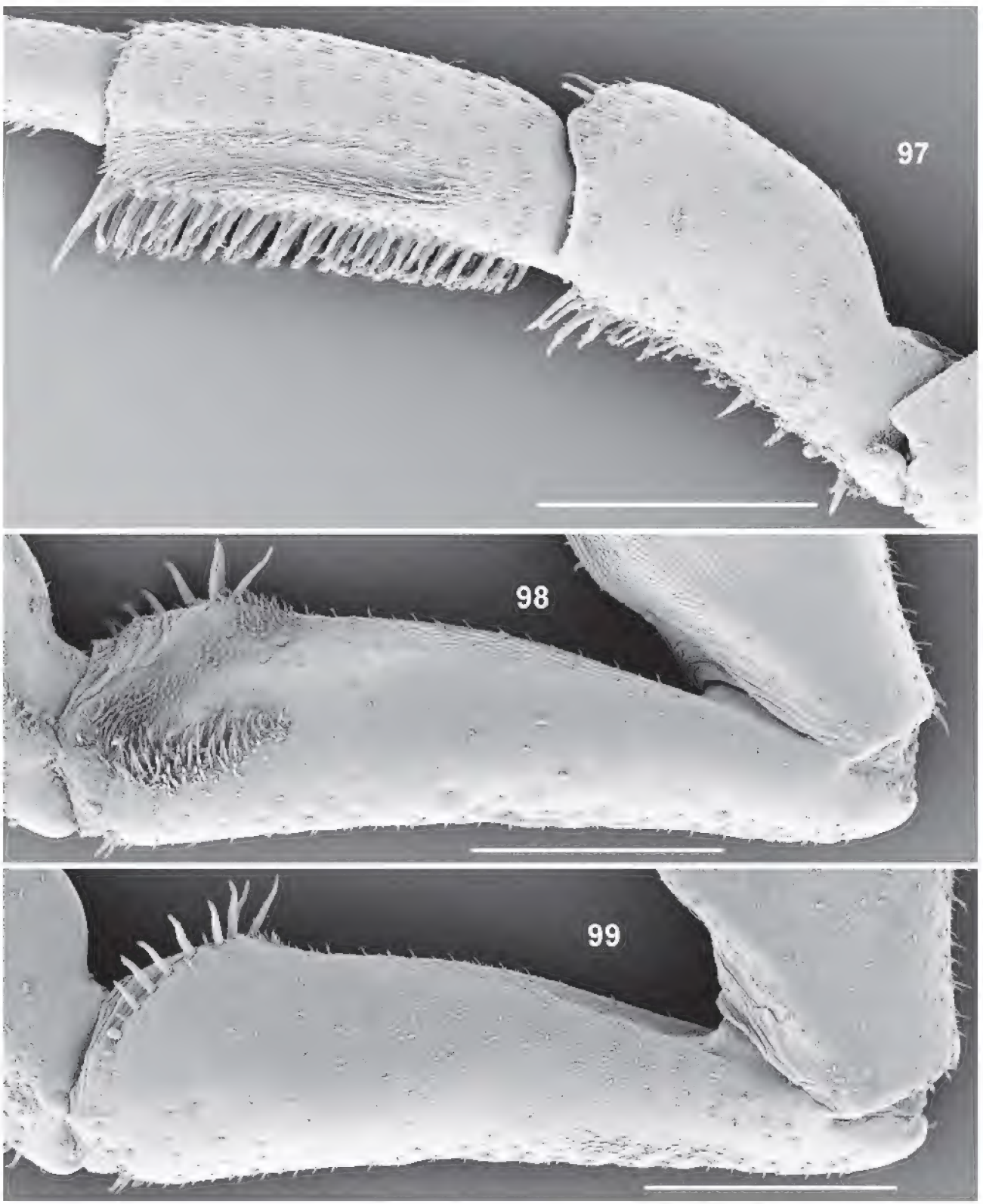
Figs. 91–93. *Armadillidium simile* (island Kérkira, SMNS 1531), ♂, 14.3 × 6.2 mm. – **91**. Pereion-epimeron 1, lateral view. **92**. Telson and uropod, dorsal view. **93**. Pleopod-exopodite 1, dorsal view.

3.20 *Armadillidium vulgare* (Latreille, 1804)

This species was treated in the 23rd contribution of this series (Schmalfuss 2006a). It originated with great probability in southeastern Europe and has been transported by human activities to all parts of the world, where it thrives



Figs. 94–96. *Armadillidium werneri* (island Kérkira, SMNS 2788), ♂, 16.0 × 7.6 mm (94, 95) and 15.0 × 7.3 mm (96). – **94**. Head and pereion-tergite 1, dorsal view. **95**. Head, dorsal view. **96**. Head, frontal view. – Scales: 1 mm.



Figs. 97–99. *Armadillidium werneri* (island Kérkira, SMNS 2788), ♂, 16.0 × 7.8 mm. – **97**. Pereiopod 1, frontal view. **98**. Ischium 7, frontal view. **99**. Ischium 7, caudal view. – Scales: 0.6 mm.

mostly in disturbed biotopes where the indigenous fauna was destroyed together with the original vegetation for agricultural reasons. A map of all Greek records is given in SCHMALFUSS (2006a).

3.21 *Armadillidium werneri* Strouhal, 1927 (Figs. 94–102, map Fig. 84)

Literature records

STROUHAL 1927: 19, figs. 11–16 (Greece, Ionian island Kefalloniá, compare Remarks below); STROUHAL 1936: 96 (Ionian island Kérkira); STROUHAL 1937b: 128 (Ionian island Kérkira); STROUHAL 1956: 590 (Ionian island Kérkira); STROUHAL 1966: 293, fig. 22 (Ionian island Kérkira).

Material examined

Greece: 2 ex., island Kérkira, Spartílas, 350 m, leg. B. & K. THALER, 12.V.1996 (SMNS 2799). – 3 ex., island Kérkira, Pantokrátor Mountain, 900 m, leg. B. & K. THALER, 31.V.1996 (SMNS 2788). – 8 ex., island Kérkira, Áno Korakianá/Ágios Márkos, olive grove, leg. B. & K. THALER, 27.V.1996 (SMNS 2793). – 3 ex., island Kérkira, Pantokrátor Mountain, leg. KHATZIKARALAMBOS, 5.XI.1990 (SMNS 2526). – 2 ex., island Kérkira, Glifáda, leg. OLIVER, IV.1982 (SMNS 1460). – 3 ex., island Kérkira, Nisáki, leg. SCHAWALLER, 24.IV.1981 (SMNS 1396).

Diagnostic characters

Maximum dimensions: 21 × 10 mm.

Coloration: Five rows of yellow spots on pereiontergites, epimera and telson yellow.

Cuticular structures: Tergites smooth (Fig. 94).

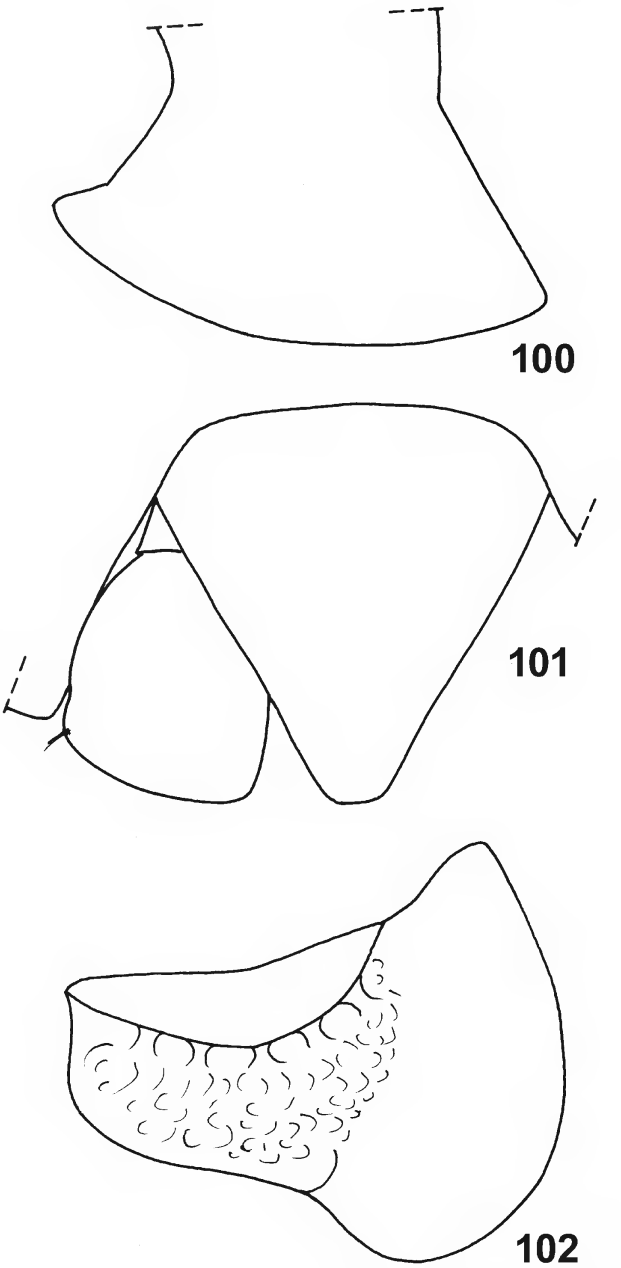
Frontal shield from behind surpassing frontal margin of head, and lateral parts of frontal line also forming crests nearly as high as frontal shield (Fig. 95); antennal lobes in frontal view triangular, with convex rounded lateral margin (Fig. 96). Hind margin of pereion-epimeron 1 with obtuse angle (Fig. 100). Telson as long as it is wide, with straight sides and rounded apex (Fig. 101). Flagellum of antenna with distal segment slightly longer than proximal one (Fig. 96). Male pereiopod 1 with dense brush of short setae on carpus, but not on merus (Fig. 97). Male ischium 7 ventrally nearly straight, frontally with a distal field of setae (Figs. 98, 99). Male pleopod-exopodite 1 with short triangular hind-lobe (Fig. 102).

Distribution (map Fig. 84)

Known from the Greek Ionian island Kérkira (= Corfu).

Remarks

The species was described from the Greek Ionian island Kefalloniá (STROUHAL 1927), but the locality seems to be a labeling error (STROUHAL 1936: 96, 1956: 590) like the record of *A. frontetriangulum* from that island (both leg. WERNER!). The species has never been found again on Kefalloniá in spite of extensive collecting activities in the 20th century.



Figs. 100–102. *Armadillidium werneri* (island Kérkira, SMNS 2788), ♂, 16.0 × 7.8 mm. – **100**. Pereion-epimeron 1, lateral view. **101**. Telson and uropods, dorsal view. **102**. Pleopod-exopodite 1, dorsal view.

4 References

ARCANGELI, A. (1952): Isopodi terrestri di Albania. – Bollettino dell'Istituto e Museo di Zoologia dell'Università di Torino **3**: 6–38, pls. 1–12.

BRANDT, I. (1833): Conspectus Monographiae Crustaceorum Oniscodorum Latreillii. – Byulleten moskovskogo Obshchestva Ispŷtateleĭ Prirodŷ **6**: 171–193, pl. 4.

SCHMALFUSS, H. (1985): Zwei bemerkenswerte neue Landisopoden-Arten von der griechischen Insel Paxi. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **380**: 11 pp.

SCHMALFUSS, H. (2003): World catalog of terrestrial isopods (Isopoda: Oniscidea). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **654**: 341 pp. [Internet version: http://www.naturkundemuseum-bw.de/stuttgart/projekte/oniscidea-catalog].

SCHMALFUSS, H. (2006a): The terrestrial isopods (Isopoda: Oniscidea) of Greece. 23rd contribution: The genus *Armadillidium* (Armadillidiidae) on the Peloponnese. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **693**: 102 pp.

SCHMALFUSS, H. (2006b): The terrestrial isopods (Isopoda: Oniscidea) of Greece. 24th contribution: The genus *Armadillidium* (Armadillidiidae) on the Aegean islands. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **698**: 43 pp.

SCHMALFUSS, H. (2008): The terrestrial isopods (Isopoda: Oniscidea) of Greece. 25th contribution: The genus *Armadillidium* (Armadillidiidae) in the provinces Macedonia and Thrace. – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **1**: 153–201.

SCHMALFUSS, H. (2010): The terrestrial isopods (Isopoda: Oniscidea) of Greece. 26th contribution: The genus *Armadillidium* (Armadillidiidae) in the province Epirus. – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **3**: 1–31.

STROUHAL, H. (1927): Zur Kenntnis der Untergattung *Armadillidium* Verh. (Isop. terr.). – Zoologischer Anzeiger **74**: 5–34.

STROUHAL, H. (1929): Die Landisopoden des Balkans. 3. Beitrag: Südbalkan. – Zeitschrift für wissenschaftliche Zoologie **133**: 57–120.

STROUHAL, H. (1936): Die Landasseln der Inseln Korfu, Levkas und Kephalonia. – Acta Instituti et Musei zoologici Universitatis atheniensis **1**: 53–111.

STROUHAL, H. (1937a): Zoologische Forschungsreise nach den Ionischen Inseln und dem Peloponnes. XVIII. Teil. Isopoda terrestria. II. Armadillidiidae, Armadillidae. – Sitzungsberichte der österreichischen Akademie der Wissenschaften, mathematisch-naturwissenschaftliche Klasse, Abteilung I, **146**: 45–65.

STROUHAL, H. (1937b): Neue Oniscoidea des Südbalkans. – Zoologischer Anzeiger **117**: 119–129.

STROUHAL, H. (1939): Zoologische Ergebnisse einer von Professor Dr. JAN VERSLUYS geleiteten Forschungsfahrt nach Zante. Isopoda. – Verhandlungen der zoologisch-botanischen Gesellschaft in Wien **88**: 173–188.

STROUHAL, H. (1942): Vorläufige Mitteilung über die von M. BEIER in Nordwestgriechenland gesammelten Asseln. – Zoologischer Anzeiger **138**: 145–162.

STROUHAL, H. (1956): Zoologische Studien in West-Griechenland. VI. Teil. Isopoda terrestria, II.: Armadillidiidae. – Sitzungsberichte der österreichischen Akademie der Wissenschaften, mathematisch-naturwissenschaftliche Klasse, Abteilung I, **165**: 585–618.

STROUHAL, H. (1966): Ein weiterer Beitrag zur Süßwasser- und Landasselfauna Korfus. – Sitzungsberichte der österreichischen Akademie der Wissenschaften, mathematisch-naturwissenschaftliche Klasse, Abteilung I, **175**: 257–315, pls. 1–6.

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The West African species of *Caenis* Stephens (Insecta: Ephemeroptera)

Peter Malzacher

Abstract

The present paper is the result of the examination of several thousand specimens of the genus *Caenis* Stephens, 1835 (Ephemeroptera) which were collected in West Africa in more than 200 light trap samples from 32 rivers in Guinea, Mali, Ivory Coast, Togo and Ghana. Five new species are described: *Caenis vermifera* **n. sp.** (Ivory Coast, Guinea), *C. nigricola* **n. sp.** (Mali, Guinea), *C. jinjanoides* **n. sp.** (Guinea, Ivory Coast), *C. kohli* **n. sp.** (Guinea), and *C. orthostilata* **n. sp.** (Mali). The extensive materials allow to add distributional data to previously known species. *C. elouardi*, *C. cibaria kunda*, *C. gilliesi*, *C. jinjana*, *C. antelucana*, *C. brevipes*, *C. berneri*, and *C. pallida* are redescribed. The eggs of most of the treated species are described based on SEM pictures. Several questions concerning supposed species relationships are discussed. The subspecies rank of *C. brevipes occidentalis* Malzacher, 1993 ist rejected.

K e y w o r d s : *Caenis*, West Africa, new species, distribution, variability of characters.

Zusammenfassung

Die vorliegende Arbeit ist eine Auswertung von mehreren Tausend Individuen der Gattung *Caenis* Stephens, 1835 (Ephemeroptera), die in mehr als 200 Lichtfallen-Proben von 32 Flüssen in Westafrika (Guinea, Mali, Elfenbeinküste, Togo und Ghana) gesammelt worden sind. Fünf neue Arten werden beschrieben: *Caenis vermifera* **n. sp.** (Elfenbeinküste, Guinea), *C. nigricola* **n. sp.** (Mali, Guinea), *C. jinjanoides* **n. sp.** (Guinea, Elfenbeinküste), *C. kohli* **n. sp.** (Guinea) und *C. orthostilata* **n. sp.** (Mali). Das umfassende Material liefert zusätzliche Verbreitungsangaben für bereits bekannte Arten. *C. elouardi*, *C. cibaria kunda*, *C. gilliesi*, *C. jinjana*, *C. antelucana*, *C. brevipes*, *C. berneri* und *C. pallida* werden wiederbeschrieben. Die Eier der meisten hier behandelten Arten werden mit Hilfe von SEM-Aufnahmen dargestellt. Einige Fragen zum vermuteten Verwandtschaftsverhältnis von Arten werden diskutiert. Der Status von *C. brevipes occidentalis* Malzacher, 1993 als Unterart wird verworfen.

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1 Introduction

Until the end of the 1970s, Caenidae of the Ethiopian region were only known from South, East and Central Africa (references see Malzacher 1993). In 1983 Soldán described a new species (*Clypeocaenis afrosetosa*) from the Upper Volta region (also included in the here examined material with a record from Guinea, Niandan). Three species of *Caenis* were described from West Africa by Malzacher (1990): *C. elouardi* from Guinea, and *C. gilliesi* and *C. antelucana* from

Senegal and Gambia. Furthermore, the species *C. cibaria* (ssp. *kunda*), *C. jinjana* and *C. brevipes* (ssp. *occidentalis*), previously only known from East Africa, were recorded in the same paper. Recently the number of Caenidae species found in West Africa (Senegal, Gambia, Guinea, Mali, Ivory Coast, Ghana, and Togo) rose to 13 by the descriptions of *Afrocercus guinensis*, *A. sartorii*, *A. inflatus*, *Tigrocercus contractus* (Malzacher & Staniczek 2006), *Aenigmocaenis morgensterni*, and *Niandancus alienus* (Malzacher 2009). In the present paper additional species of the genus *Caenis* are described that raise the total number of Caenidae from West Africa to 18. Diagnoses and distribution records of previously known species of *Caenis* are improved. Some female stages could be assigned to males, and the structure of their eggs is shown by SEM pictures.

Acknowledgements

My special thanks go to Michel Sartori (Musée Cantonal de Zoologie, Lausanne) for leaving me the material for investigation. Thanks are also due to Arnold Staniczek and Susanne Leidenroth (Staatliches Museum für Naturkunde, Stuttgart) for help and making the SEMs. Michel Sartori and Arnold Staniczek kindly read the manuscript.

2 Materials and methods

The examined material, consisting of samples from light traps and preserved in 75 % ethanol, was collected between 1983 and 1988, and to a smaller part between 1974 and 1978 by the ORSTOM team of Dr. Jean-Marc Elouard (Montpellier) and kindly made available by Dr. Michel Sartori (Lausanne). The collections were acquired during the Onchocerciasis Control

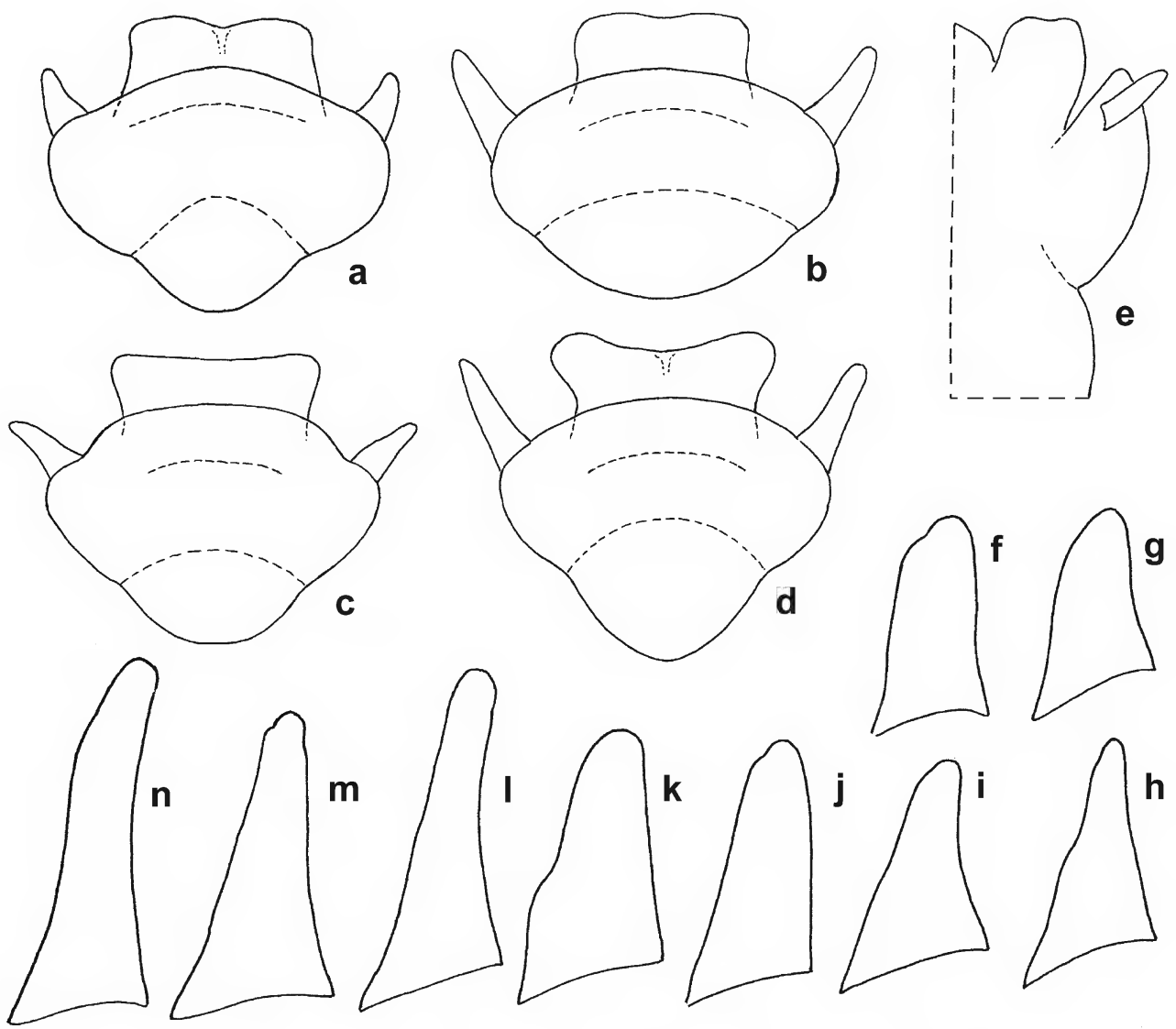


Fig. 1. *Caenis elouardi*, ♂, genitalia. – **a–d**. Different shapes of styliger. **e**. Styliger, lateral view. **f–n**. Different shapes of forcipes.

Programme in West Africa (Le Berre et al. 1990). Most of the samples, about 120, were collected in Guinea near 19 rivers and streams, the others in Mali (57 samples, 5 rivers), Ivory Coast (25 samples, 6 rivers), Ghana (4 samples, 1 river) and Togo (4 samples, 1 rivers). 4 samples from Ghana were collected by Dr. Sebastian Endrödy-Younga (see Gattolliat & Sartori 2006).

Where available, the number of males and females is given in the material part. "Several" is used for a small indefinite number of specimens (from 3 to about 10). In case of mass samples, only a smaller sample of 50 or 100 specimens was determined, and the percentage of individuals of a species in the respective *Caenis*-sample is indicated. The abbreviation 'SI' is used for 'subimago'.

The majority of the material, including the types of the newly described species, is stored in the Musée Cantonal de Zoologie, Lausanne, Switzerland. A small number of additional specimens is preserved in the author's collection.

Specimens used for SEM were dehydrated through a stepwise immersion in ethanol and then dried by critical point drying. The mounted material was coated with a 20 nm Au/Pd layer, and examined with an ISI-SS40 scanning electron microscope at 10 kV.

3 Systematic account

3.1 *Caenis elouardi* Malzacher, 1990 (Figs. 1, 2a–j, 14–17)

Malzacher (1990: 8).

Material examined

Ghana: River Black Volta, Brong Ahafo region, 27.X.1965, 6 ♂♂, 1 ♀.

Togo: River Mono, Kpessi, 30.XI.1985, 2 ♀♀.

Ivory Coast: River Sassandra, Lengekoro, 12.VIII.1984, 6 ♂♂. – River Cavally, Grié (Toulepleu region), 1.II.1988, 9 ♀♀. – River Cavally, Tai, 10.II.1988, 10 ♂♂, 16 ♀♀. – River Cavally, Tiboto-Grabo, 11.II.1988, 3 ♂♂, 2 ♀♀. – River Cavally, Sotowate near Grabo, 26.II.[1988?], 1 ♂.

Guinea: River Feredougouba [no locality], 4.III.1985, 1 ♂, 1 ♀. – River Feredougouba, Badala, 30.III.1985, ca. 70 ♀♀. – River Kolente, Kora, 10.II.1986, 32 ♂♂, ca. 60 ♀♀. – River Kaba (= Little Scarcies), road Faranah–Mamaou, 7.II.1986, 7 ♂♂,

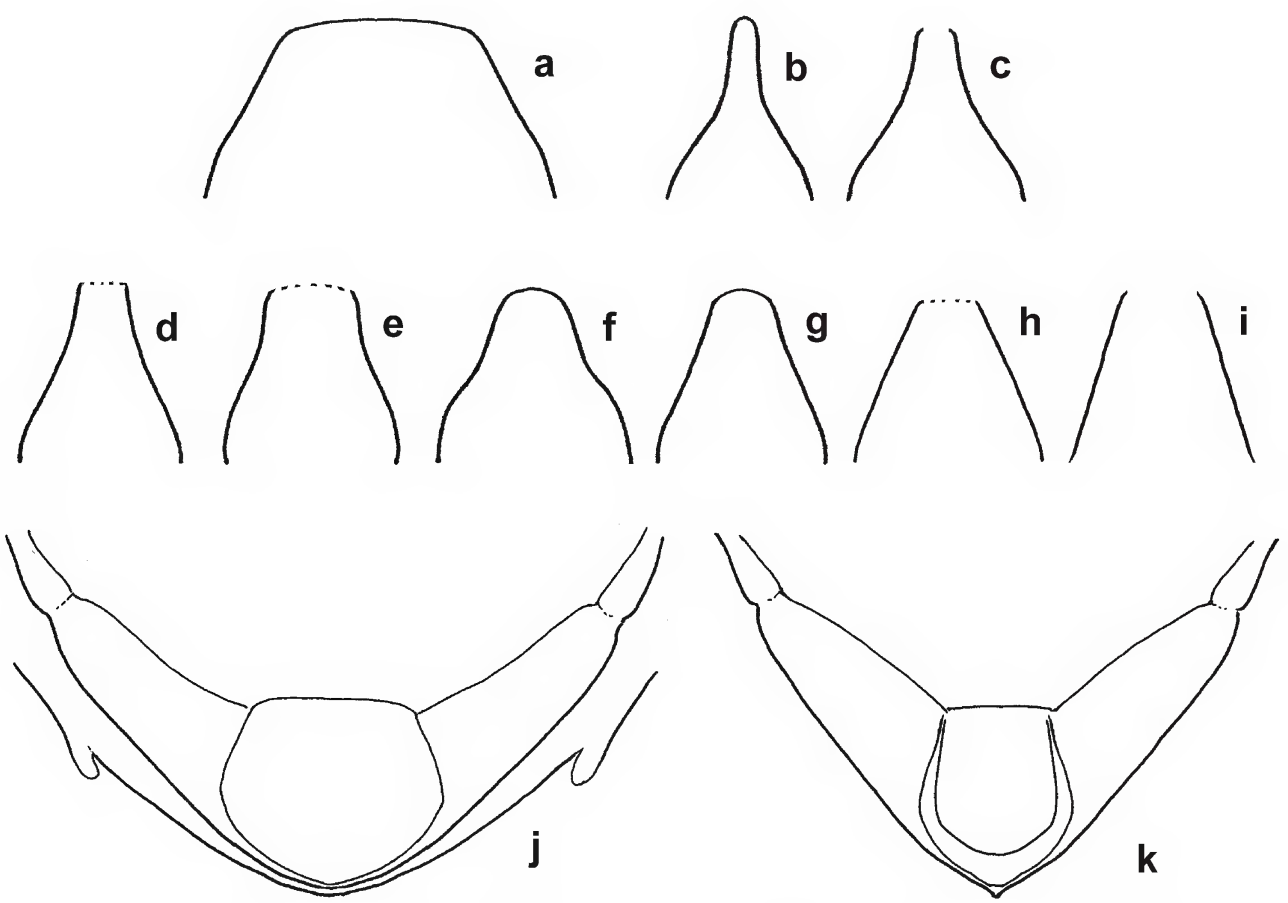


Fig. 2. *Caenis elouardi* (a–j), *C. vermifera* n. sp., ♂ (k). – **a–i**. Different shapes of prosternal ridges, ♀ (a), ♂♂ (b–i). **j**, **k**. Scutellum.

7 ♀♀. – River Kaba (= Little Scarcies), Kaba, 23.I.1987, 1 ♂, 1 ♀. – River Koumba, near Sita, 26.I.1987, 1 ♀. – River Diani, N'zébéla, 31.I.1988, 5 ♀♀. – River Makona, Bofossou, 29.I.1988, 2 ♂♂, 2 ♀♀; 2.IX.1988, 6 ♂♂, 2 ♂♂ SI. – River Niandan, Bamakoya, 25.X.1984, 5 ♂♂, 1 ♀. – River Niandan, Kissidougou, 22.I.1987, 1 ♂. – River Niandan, Sassambaya (locus typicus), 27.III.1985, 11 ♂♂, 6 ♀♀; 21.III.1986, 2 ♂♂, 6 ♀♀; 19.IV.1986, 1 ♀; 20.IV.1986, 6 ♂♂, 1 ♀; 14.V.1986, 3 ♂♂, 1 ♀; 17.VI.1986, 1 ♂, 1 ♀; 9.XII.1986, 13 ♂♂, 5 ♀♀; 10.XII.1986, 8 ♂♂, 1 ♀; 20.I.1987, 3 ♂♂; 25.XI.1987, 1 ♂; 26.XI.1987, 1 ♂; 5.IV.1988, 3 ♂♂.

Redescription

Male imago

Measurements, ratios and colouration

Body length 3.8–4.8 mm; wing length 3.0–3.3 mm; length of fore leg 2.2–2.4 mm (Ghana: 1.8–2.0 mm); fore femur to fore tibia length = 0.78–0.89; fore tibia to fore tarsus length = 0.88–0.98; fore leg to hind leg length = 1.25–1.33 (Ghana: 1.10–1.15); $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 2.4–2.9 : 1.3–1.6 : 1.2–1.5 : 1.1–1.4; body length to length of cercus to length of terminal filum = 1 : 2.86–2.95 : 2.10–3.14; terminal filum to cercus length = 1.06–1.14.

Colouration of cuticle: Meso- and metathorax orange-brown, other parts orange to yellowish-white.

Epidermal pigmentation: Vertex, posterior part of frons between the lateral ocelli, eye-bases and an apical ring on pedicel (MALZACHER 1990: fig. 4c) intensively blackish-brown. Pronotum grey with round, paramedian brighter areas. Sutures on mesonotum and scutellum blackish-brown, areas between the sutures more or less greyish. Metanotum and abdominal tergites I and II with greyish-brown transverse bands, tergites VII–X grey, III–VI light, sometimes lateral parts more or less shaded with grey. Fore legs and some spots and dashes surrounding mid and hind coxae greyish-brown. Basal parts of C, SC and R1 reddish-brown.

Morphology

Head: Base of antennal flagellum only slightly dilated; dilated part 0.4 times length of pedicel (MALZACHER 1990: fig. 4c).

Thorax: Prosternal ridges inconspicuous and narrow, forming a bell-shaped or trapezoid structure (Fig. 2a–i). Distance between fore coxae relatively wide (MALZACHER 1990: fig. 4e). Mesonotum elongated (length 1.5–1.6 times width of head). Hind margin of scutellum broadly rounded, without tip, central field large, shaped like a rounded pentagon (Fig. 2j). Metanotum with a weak transverse ridge, posteriorly with a broad and thin lamella (MALZACHER 1990: fig. 4f).

Abdomen: Tergum II without a finger-like process. Lateral filaments lacking.

Genitalia and sternum IX as in MALZACHER (1990: fig. 4a). Genitalia hardly sclerotized, very variable in shape (Fig. 1a–d), bulging out like a sack from sternum IX (Fig. 1e). Penis short and broad, with rounded corners and a basal sclerite, lobes short and variable. Forcipes apically rounded, short or very short, highly variable in shape (Fig. 1f–n), thus the ratio of the distance between the extreme lateral points of the forceps bases to forceps length ranges between 2.8 and 4.7. Segment IX scarcely sclerotized, without posterolateral processes.

Female imago

Measurements and colouration

Body length 5.8–8.3 mm; wing length 4.2–5.0 mm.

Same colouration as in males, but pigmentation of abdomen often weaker. The apical blackish ring on the pedicel, in combination with the large size, is characteristic for females.

Morphology

Scutellum (particularly central region) and prosternal trapezoid broader than in males (Fig. 2a), the latter with inconspicuous ridges which are sometimes barely visible.

Egg

Chorion strongly pored, surface between pores often bulging (Fig. 17b); pore channels deeply reaching into the chorion, passing through the whole exochorion, often bifurcate (Fig. 17a). One flat, cap-shaped epithema of different extension (Fig. 14); very fine extraepithematal threads with small terminal knobs leading from margin of epithema (Fig. 15). One very short micropyle with a broad mouth and large, round sperm guide (Fig. 16).

Larva unknown.

Distribution

Widely distributed in West Africa, becoming rare towards the west. No records from Mali, Senegal and Gambia.

3.2 *Caenis vermifera* **n. sp.**
(Figs. 2k, 3, 18)

Holotype, ♂ (dissected, on microslide), **Ivory Coast**, River Maraoué, Entomokro, 17.VI.1976.

Paratypes: Same data as holotype, 1 ♂ and 4 ♂♂ SI, 2 ♀♀ and 4 ♀♀ SI.

Other material: **Guinea**, River Milo, Boussoulé, 19.IV.1986, 1 ♂.

Etymology

The species name 'vermifera' refers to the characteristic vermiform process on the mesonotum.

Description

Male imago

Measurements, ratios and colouration

Body length 2.1–2.3 mm; wing length 1.9–2.1 mm; length of fore leg 1.2–1.3 mm; fore femur to fore tibia length = 0.58–0.60; fore tibia to fore tarsus length = 1.00–1.14; fore leg to hind leg length = 1.52–1.62; $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 3.0 : 1.8 : 1.7 : 1.4.

Colouration of cuticle: Meso- and metathorax yellowish-brown, head and prothorax a little lighter, abdomen yellowish, cerci whitish.

Epidermal pigmentation: Greyish pigment very sparsely and diffuse on vertex, pronotum and abdominal terga.

Morphology

Habitus: Body broad and sturdy, outline rounded, abdomen short.

Head: Relatively short and broad. Eyes small. Base of antennal flagellum not dilated (Fig. 3h), pedicel more than 3 times as long as scape and about 3 times as long as wide.

Thorax: Prosternal ridges only slightly converging anteriorly, forming a narrow trapezoid (Fig. 3e). Mesonotal membrane producing a long vermiform process as long as

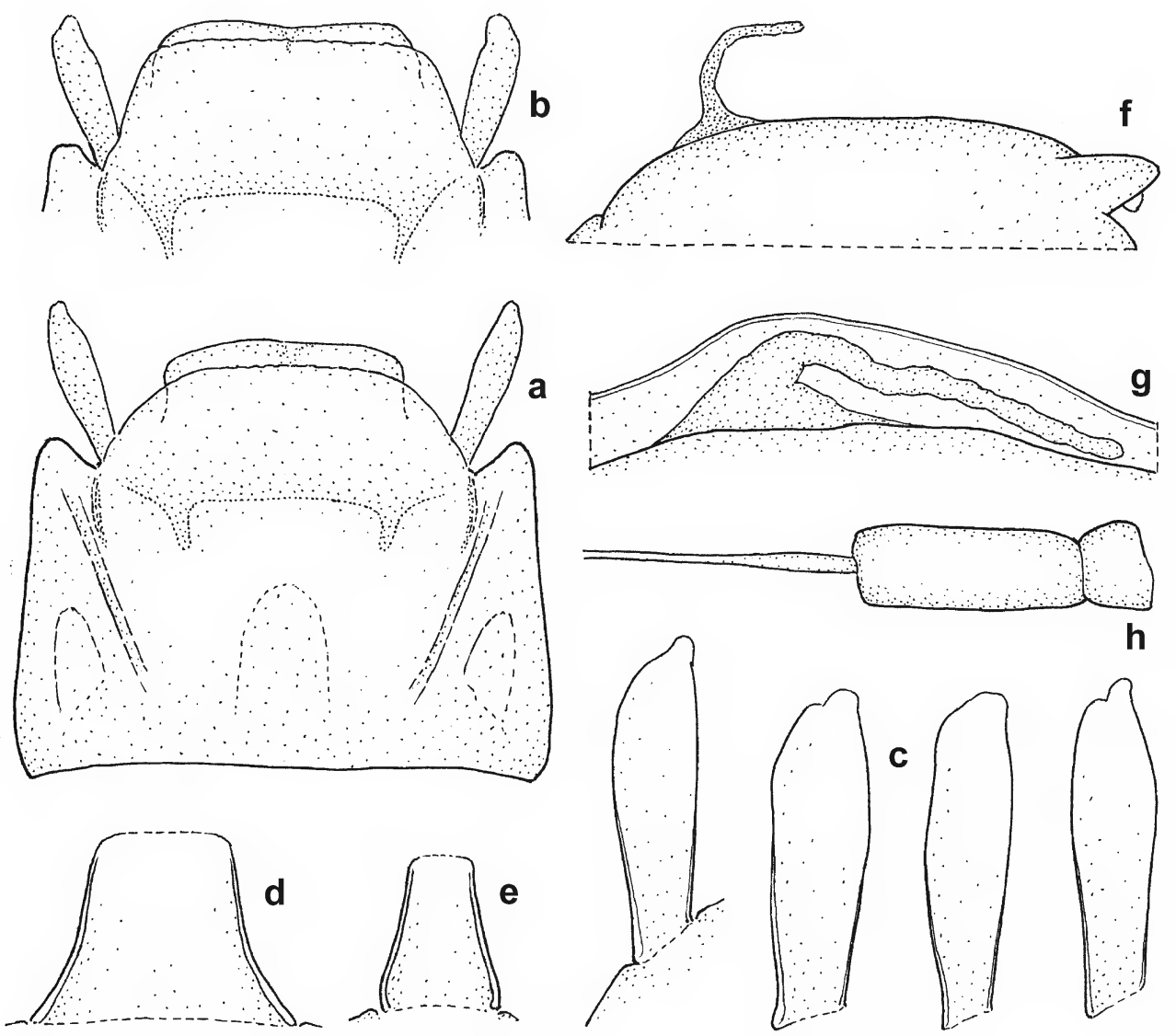


Fig. 3. *Caenis vermifera* n. sp., ♂ (a–c, e–h), ♀ (d). – **a**, **b**. Genitalia. **c**. Different shapes of forcipes. **d**, **e**. Prosternal trapezoid. **f**. Mesonotum with vermiform process, lateral view. **g**. Vermiform process of mesonotal membrane, covered by the subimaginal cuticle. **h**. Antennal scape, pedicel and base of flagellum.

one-third of the mesonotal suture (Fig. 3f). The vermiform process is present in subimagines, sometimes below the subimaginal skin (Fig. 3g), but broken off in most imagines. Scutellum V-shaped and posteriorly pointed (Fig. 2k).

Abdomen: Tergum II with a thin, finger-like process. Lateral filaments of abdominal segments very short or absent.

Genitalia and sternum IX as in Fig. 3a, b. Penis short and broad, with rounded corners and barely separated lobes, often nearly totally covered by the styliger plate. Styliger sclerite with thin, sometimes pointed apophyses of moderate length. Basolateral sclerite long and straight, often forming a shallow groove (Fig. 3a). Forceps short, club-shaped, basally narrowed, apically rounded and often with a small bump (Fig. 3c). Ratio of distance between extreme lateral points of forcipes bases to forceps length 2.2–2.4. Sternum IX nearly quadrate, posterolateral processes short and broadly rounded (Fig. 3a, b).

Female imago

Measurements and colouration

Body length 2.8–3.2 mm; wing length 2.5–2.8 mm. Same colouration as in males.

Morphology

As in males, except of prosternal trapezoid broader (Fig. 3d), ridges more inconspicuous, sometimes hardly visible. Abdominal segments VII–IX with short and bump-like posterolateral processes. The presence of a vermiform process on the mesonotum is characteristic for females.

Egg

Chorion without any structure. One very flat epithema covering up to one-third of the egg surface, with tiny knobs (Fig. 18). One short and inconspicuous micropyle with a small oval sperm guide.

Larva unknown.

Differential diagnosis

Caenis vermifera n. sp. is similar to *C. elouardi* and *C. ghibana* Malzacher, 1990 (see discussion, chapter 5). For the differences see key below (chapter 4) and discussion.

Distribution

This species is known from the type locality, River Maraoué, Central Ivory Coast, and from River Milo, North East Guinea.

3.3 *Caenis cibaria kunda* Malzacher, 1993 (Fig. 4)

Malzacher (1993: 393).

Material examined

Guinea: River Milo, Boussoulé, 19.IV.1986, 3 %; 18.III.1987, 2 %. – River Loffa, Macente, 30.I.1988, 20 %. – River Niandan, Sassambaya, 17.–18.VI.1986, 15–22 %; 8.II.1988, 4 %; 19.IV.1986, 2 %; 15.V.1986, 16 %; 12.IV.1988, 4 %; 19.III.1987, 2 %; 23.V.1986, 4 %; 28.VIII.1986, 4 %.

Mali: River Niger, Tienfala, 23.V.1986, 4 %; 28.VIII.1986, 4 %. – River Senegal, Chutes du Felou, 13.I.1986, 5 ♂♂. – River Bakoye, Kokofata, 24.X.1986, 28 %; 4.VIII.1987, 4 %; 23.VIII.1987, 20 %; 20.XI.1987, 18 %.

Redescription

Male imago

Measurements, ratios and colouration

Body length 2.1–2.8 mm; wing length 1.6–2.0 mm; length of fore leg 1.5–1.8 mm; fore femur to fore tibia length = 0.58–0.68; fore tibia to fore tarsus length = 0.97–1.29; fore leg to hind leg length = 1.64–1.90; $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 2.8–3.9 : 1.8–2.4 : 1.7–1.8 : 1.2–1.4; body length to length of cercus to length of terminal filum = 1 : 1.7 : 2.2; terminal filum to cercus length = 1.3.

Colouration of cuticle: Meso- and metathorax orange-yellowish-brown, other parts yellowish to white.

Epidermal pigmentation: While the pigmentation of the type specimens from Gambia is very similar to *Caenis cibaria* from East Africa (Malzacher 1993), the pigmentation of here described specimens from Mali and Guinea is very sparse. Only diffuse greyish pigment can be found on vertex and abdominal terga. Scutellum and sutures of mesonotum sometimes slightly pigmented.

Morphology

Head: Dilatation of base of antennal flagellum 0.7 times length of the pedicel, and at least one-third of its width.

Thorax: Prosternal triangle isosceles, more or less elongated with rounded tip. Length of mesonotum 1.26–1.34 times width of head. Segments II–IV of fore tarsus apically with lateral tufts of strong spines.

Abdomen: Tergum II without a finger-like process. Lateral filaments very short or absent.

Genitalia and sternum IX as in Malzacher (1993: fig. 6b). Penis broad, lobes very short, posterior margin rounded, with a median incision with rounded corners and a basal sclerite. Fore margin of styliger sclerite convex, apophyses parallel or slightly converging anteriorly. Forcipes as in Malzacher (1993: fig. 5d), broader and shorter as in *Caenis cibaria cibaria* (compare Malzacher 1993: figs. 5c, 6a).

Populations of *Caenis cibaria kunda* from the Fouta Djalon region of Central West Guinea have some different characters:

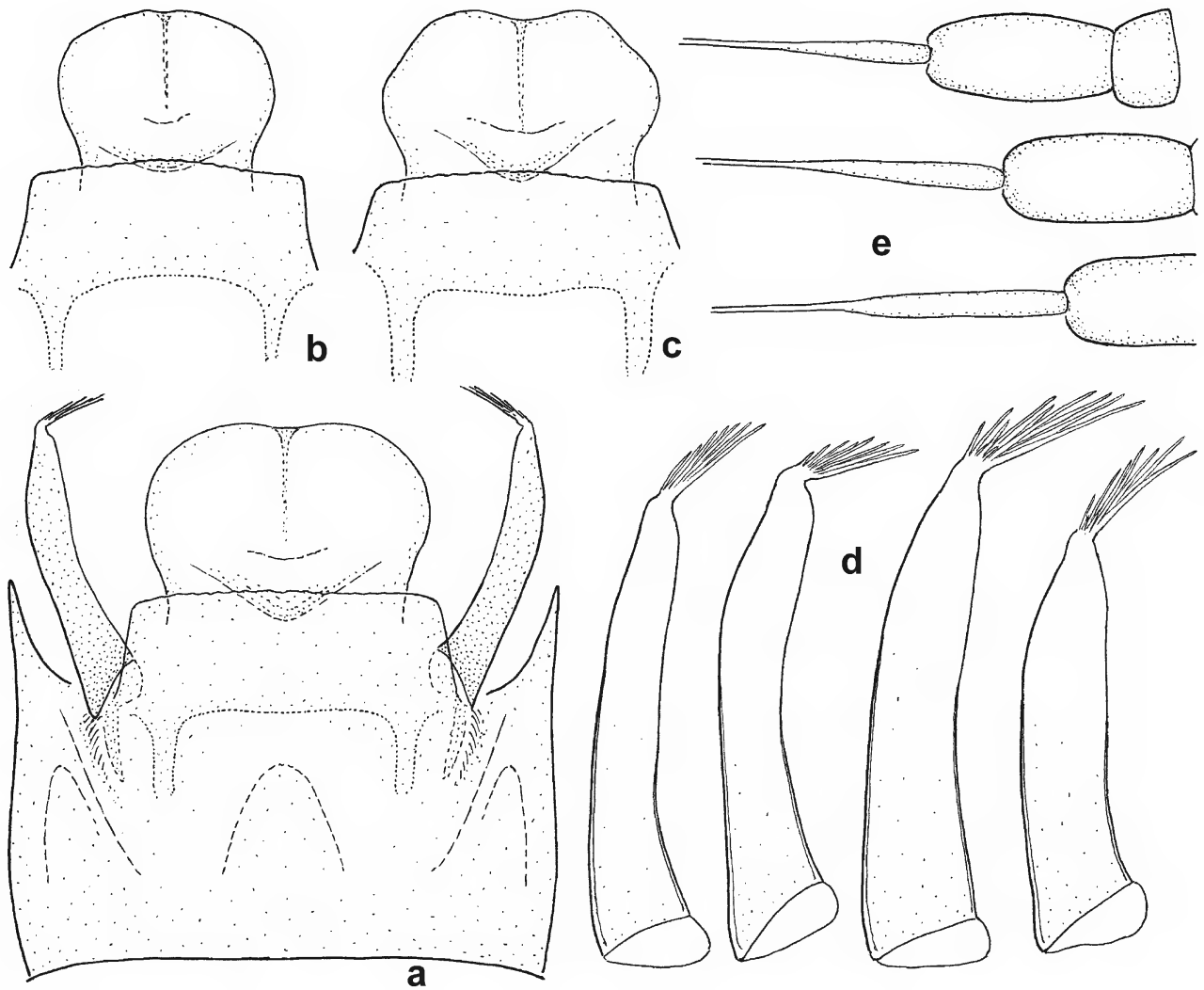


Fig. 4. *Caenis cibaria kunda*, population from Fouta Djalon region, ♂. – **a–c**. Genitalia with different penis shapes. **d**. Different shapes of forcipes. **e**. Antennal base, different shapes of flagellum base.

Material examined

Guinea: River Kokoulou, road Pita–Madina, 25.I.1987, 105 ♂♂. – River Kaba (= Little Scarcies), Kaba, 23.I.1987, 6 ♂♂ and 9 ♂♂ SI. – River Kaba, Tene, 24.I.1987, 65 ♂♂. – River Koumba, near Sita, 26.I.1987, 34 ♂♂. – River Konkouré, Linsan near Mourou, 29.I.1987, ca. 100 ♂♂ and several ♂♂ SI. – River Bafing, Timbo, 31.I.1987, 4 ♂♂ and 6 ♂♂ SI.

Differences in measurements and colouration

Most specimens are distinctly longer (body length 2.7–4.0 mm, wing length 2.0–3.0 mm).

The pigmentation is often more conspicuous and is similar to that of *Caenis cibaria* from East Africa, and *C. cibaria kunda* from Gambia. Description of such specimens:

Colouration of cuticle: Meso- and metathorax yellowish-brown, head, prothorax and legs lighter yellowish-brown, abdomen yellowish or white, cerci whitish.

Epidermal pigmentation: Fore margin of frons and a band between the lateral ocelli blackish, sometimes with a line on hind margin which is more or less interrupted in the middle or reduced to two black spots. Other parts of the head pale or weakly pigmented. Pronotum with two paramedian, short, blackish dashes which connect a transversal streak with the blackish edged hind margin. Two blackish marks at lateral margins. Sutures of mesonotum more or less blackish, scutellum strongly pigmented. Metanotum, pleura and coxae with streaks and dashes. Femora with greyish preapical spots. Abdominal terga with broad transverse bands which are more or less interrupted in the middle.

Morphological differences

Dilated part of antennal flagellum of different length, often elongated and with nearly parallel margins (Fig. 4e). Penis rounded, often nearly circular (Fig. 4a, b). Forcipes in most cases broader (Fig. 4d). Apical spines very long and thin, even in their basal part not fused, therefore often broken off in preserved specimens. Transitional stages to other populations of *Caenis cibaria kunda* are observed for all these characters.

Female imago and larva unknown.

Distribution

Caenis cibaria kunda seems to be less abundant and not as widely distributed in West Africa as most of the other species. The subspecies is only known from Gambia, East and Central Guinea, and western Mali. *C. cibaria cibaria* is widely distributed in lakes and big rivers in the East African rift valley region.

3.4 *Caenis gilliesi* Malzacher, 1990 (Figs. 7j–k, 19–21)

Malzacher (1990: 10).

Material examined

Togo: River Mono, Kpessi, 30.XI.1985, 46 ♂♂, 5 ♀♀. – River Mono, Landa, 1.XII.1985, several ♂♂.

Ivory Coast: River Bagoé-Bani; Kouto, 10.III.1976, several ♂♂. – River Maraoué, Entomokro, 2.VIII.1977, 50 ♂♂, 15 ♀♀. – River Cavally, Tiboto-Grabo, 22.II.1978, 7 ♂♂; 11.II.1988, several ♂♂. – River Cavally, Lieupleu, 3.II.1988, several ♂♂. – River Cavally + N'ze, Tai, 10.II.1988, several ♂♂. – River Bandama, Badikaha, 18.IX.1985, several ♂♂. – River Bandama, Bema, 21.VIII.1985, several ♂♂; 17.IX.1985, several ♂♂.

Guinea: River Bafing, Timbo, 31.V.1983, 1 ♂, 31.I.1987, 10 %. – River Milo, Boussoulé, 28.III.1984, several ♂♂; 22.XII.1984, several ♂♂; 24.I.1985, 3 ♂♂, 1 ♀; 28.III.1985, 40 % incl. 7 ♀♀; 26.IV.1985, 20 ♂♂; 15.V.1985, several ♂♂; 31.VI.1985, 32 %; 2.IV.1986, several ♂♂; 22.III.1986, 12 %; 10.XII.1986, several ♂♂; 22.I.1987, 64 %; 17.II.1987, several ♂♂; 17.III.1987, 62 %; 7.V.1987, 12 ♂♂. – River Niger, Kouroussa, 27.I.1985, 14 ♂♂. – River Feredougouba, Badala, 4.III.1985, 52 %; 30.III.1985, 26 ♂♂; 13.V.1985, several ♂♂. – River Sankarani, Mandiana, 7.V.1985, 30 ♂♂, 8 ♀♀; 28.V.1985, several ♂♂. – River Tomine, Télimélé, 27.I.1986, 2 ♂♂. – River Kaba, Faranah–Mamaou, 7.II.1986, 70 %; 23.I.1987, 2 ♂♂. – River Kaba, Tene, 24.I.1987, 21 %. – River Kolente, Kolente, 9.II.1986, 99 %. – River Kolente, Kora, 10.II.1986, 70 %. – River Dubreka, Dubreka, 10.II.1986, 99 %. – River Kakrima, Kouri, 15.II.1986, 54 % incl. 11 ♀♀. – River Badi, Samou Adé, 18.II.1986, several ♂♂; 11.V.1987, several ♂♂. – River Niandan, Sassambaya, 19.IV.1986, 16 ♂♂; 20.IV.1986, several ♂♂; 14.V.1986, 5 ♂♂; 18.III.1987, 2 %; 25.XI.1987, 1 ♂; 5.IV.1988, several ♂♂. – River Kokoulou, road Pita–Madina, 25.I.1987, 46 %. – River Koumba, near Sita, 26.I.1987, 16 % incl. 8 ♀♀. – River Konkouré, Acondea, 28.I.1987, 10 ♂♂; 2.V.1987, 100 %. – River Makona, Nangoa, 19.II.1987, several ♂♂. – River Loffa, Macenta, 30.I.1988, several ♂♂. – River Diani, N'zébéla, 31.I.1988, several ♂♂.

Mali: River Bakoye, Kokofata, 17.IX.1985, 1 ♂; 8.XII.1986, several ♂♂; 12.I.1987, 2 ♂♂; 9.II.1987, 1 ♂; 16.IX.1987, several ♂♂; 5.X.1987, 1 ♂; 19.XI.1987, several ♂♂. – River Falémé [no locality], 18.I.1986, several ♂♂.

Redescription

Male imago

Measurements, ratios and colouration

Body length 1.7–2.2 mm (2.4 mm Sita, Kaba); wing length 1.5–1.8 mm (2.3 mm Kaba); length of fore leg 1.3–1.6 mm; fore femur to fore tibia length = 0.62–0.75 (0.71–0.81 Mono, 0.75–0.79 Sita); fore tibia to fore tarsus length = 0.98–1.13 (–1.15 Mono, Sita); fore leg to hind leg length = 1.49–1.68 (1.65–1.91 Mono, 1.53–1.68 Sita); $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 2.4–3.2 (3.5) : 1.5–2.1 (1.9–2.5) : 1.6–2.2 (1.8–2.7) : (1.2) 1.3–1.7 (2.1); body length to length of cercus to length of terminal filum = 1 : 1.75–2.2 : 2.75–3.8.; terminal filum to cercus length = 1.6–1.7.

Colouration of cuticle: Meso- and metathorax reddish-brown, head and prothorax lighter, abdomen yellowish-white to reddish-white, cerci white.

Epidermal pigmentation (of the Senegal material, see Malzacher 1990: fig. 6b): Frons and vertex regularly greyish-brown, posterior vertex sometimes with a dark brown transverse band. Pronotum diffusely greyish with a transverse line and two paramedian black spots near hind margin which may be fused with the transverse line. Scutellum and posterior sutures of mesonotum strongly pigmented (sometimes forming a V-shaped mark or two oblique dashes), like prealar bridges and surrounding of coxae. Abdominal terga I and II with narrow, III–VI with broad greyish-brown transverse bands, on segments VII–VIII more conspicuous but interrupted in the middle, IX with a narrow transverse band on fore margin. Deep black paratergal dashes on segments VII–IX and preapical spots on femora very conspicuous. – Most populations from Mali, Guinea and Ivory Coast possess a severely reduced pigmentation. Even the paratergal and femoral dashes are often nearly invisible. Specimens from Ivory Coast, River Maraoué have a yellow meso- and metathorax. All other parts are yellowish-white or white.

Morphology

Head: Eyes relatively small. Base of antennal flagellum dilated; dilated part about as long as pedicel, but of different width (Malzacher 1990: fig. 6e).

Thorax: Shape of prosternal triangle variable, equilateral or isosceles, often with broadly rounded tip (Malzacher 1990: fig. 6f). Segments II–IV of fore tarsus apically with lateral tufts of strong spines (Malzacher 1990: fig. 6a).

Abdomen: Tergum II without a finger-like process. Lateral filaments of abdominal segments very short or absent.

Genitalia and sternum IX as in MALZACHER (1990: fig. 6c). Penis short and broad, semi-elliptical, hind margin often with a median incision, nearly without separated lobes, ventrally with a transverse brownish flat V-shaped sclerite. Apophyses of styliger sclerite very long and bent, anteriorly diverging. Forcipes long and bent, variable in shape even within the same population (Fig. 7j, k), projecting about one-third of their length over the penis (MALZACHER 1990: fig. 6c, d); apically with three short spines, two of them sturdy and basally broadened (MALZACHER 1990: fig. 6d).

Female imago

Measurements and colouration

Body length (2.3 mm Mandiana) 2.7–3.3 mm; wing length 2.3–2.6 mm.

Same colouration as in males. Females are characterized by the strongly pigmented scutellum, paratergal dashes and preapical spots on the femora in combination with a small size.

Morphology

Not different from males.

Egg

Chorion smooth when observed through a light microscope; very fine and densely pored in SEM pictures, with a honeycomb-like pattern of flat ridges (Fig. 21). Two flat epithemata with very small knobs (Fig. 19). One thin micropyle with scarcely broadened mouth and a finely edged oval sperm guide (Fig. 20).

Larva unknown.

Distribution

Widely distributed and with high abundance in West Africa. This species is, included in 78 samples from 19 localities, sympatric with *Caenis jinjana* in 40 samples from 15 localities and with *C. nigricola* in 24 samples from 13 localities.

3.5 *Caenis nigricola* **n. sp.**
(Figs. 5, 6, 22–24)

Holotype, ♂ (on microslide): **Mali**, River Niger, Gao, 7.IX.1987.

Paratypes: Same data as holotype, 12 ♂♂, 4 ♀♀. – Same locality as holotype, 7.IX.1988, 14 ♂♂, 5 ♀♀.

Other material: **Mali**, River Niger, Bamako, 14.IX.1984, 14 ♂♂, 4 ♀♀. – **Guinea**: River Milo, Boussoulé, 28.III.1984, several ♂♂; 28.III.1985, 38 %; 26.IV.1985, 5 ♂♂; 31.VI.1985, 6 %; 22.III.1986, 8 %; 2.IV.1986, several ♂♂; 10.XII.1986, several ♂♂; 22.I.1987, 2 %; 17.III.1987, 14 %; 7.V.1987, 9 ♂♂. – River Niandan, Bamakoye, 10.IX.1984, several ♂♂. – River Niger, Kouroussa, 27.I.1985, 3 ♂♂. – River Niandan, Sassambaya, 21.III.1986, 4 ♂♂; 18.III.1987, 1 ♂.

Etymology

The name 'nigricola' (Latin) was chosen because the species inhabits great parts of the River Niger.

Description

Male imago

Measurements, ratios and colouration

Body length 1.5–1.8 mm (the smallest Caenidae species); wing length 1.4–1.5 mm; length of fore leg 1.2–1.3 mm; fore femur to fore tibia length = 0.73–0.80; fore tibia to fore tarsus length = 1.00–1.09; fore leg to hind leg length = 1.50–1.58; $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 3.7–4.2 : 1.9–2.2 : 1.6–2.0 : 1.3–1.7; body length to length of cercus to length of terminal filum = 1 : 2.2 : 3.2.

Colouration of cuticle: Meso- and metathorax yellowish-brown, head and prothorax slightly lighter, abdomen yellowish, cerci whitish.

Epidermal pigmentation: Head white, without pigmentation. Pronotum with two blackish-grey paramedian spots and anterolateral corners with smoky grey marks. Posterior parapsidal sutures on posterior parts of mesonotum strongly pigmented, anterolaterally extended forming zigzag bands up to the wing bases. Together with the pigmented margins of the scutellum there are two V-shaped marks behind each other which are characteristic for this species. Pleura with spots and lines, particularly around coxae. Abdominal terga I and II with transverse bands which are more or less interrupted in the middle. Other terga very light but with conspicuous paratergal dashes. Femora with preapical spots. Fore legs more or less smoky grey. Pigmentation more or less reduced in most populations, often nearly entirely absent.

Morphology

Head: Base of antennal flagellum slightly dilated (Fig. 6j).

Thorax: Prosternal triangle broad, apically rounded or trapezoid. Segments II–IV of fore tarsus apically with small lateral tufts of stronger spines (Fig. 6i).

Abdomen: Tergum II without a finger-like process. Lateral filaments of abdominal segments very short or absent.

Genitalia and sternum IX as in Fig. 5a–c. Penis short and broad, semicircular, without separate lobes, ventrally with a transverse brownish sclerite, sickle-shaped or shaped like a flat V. Styliger sclerite with short, often barely visible apophyses. Forceps short and broad, often a little stocky and with parallel sides (Fig. 6a–d), apically with a sturdy spine and laterally accompanied with a thin and inconspicuous second spine (Fig. 6g).

Female imago

Measurements and colouration

Body length 1.9–2.1 mm; wing length 1.7–1.8 mm.

Same colouration as in males. Females are characterized by V-shaped marks on mesonotum, paratergal dashes and preapical spots on femora in combination with a small size.

Morphology

Not different from males.

Egg

One regular flat epithema with small knobs (Figs. 22, 24). Chorion densely pored, hardly visible under a light microscope. Mouth of single micropyle not broadened, sperm guide a little deepened, densely pored like chorion (Fig. 23).

Larva unknown.

Differential diagnosis

Caenis nigricola n. sp. is similar to *C. cibaria* and *C. gilliesi* (see discussion, chapter 5). For differences see couplets 5 and 6 in the key below (chapter 4).

Populations of *Caenis nigricola* from the region west of the upper Niger and its tributaries differ in some male characters:

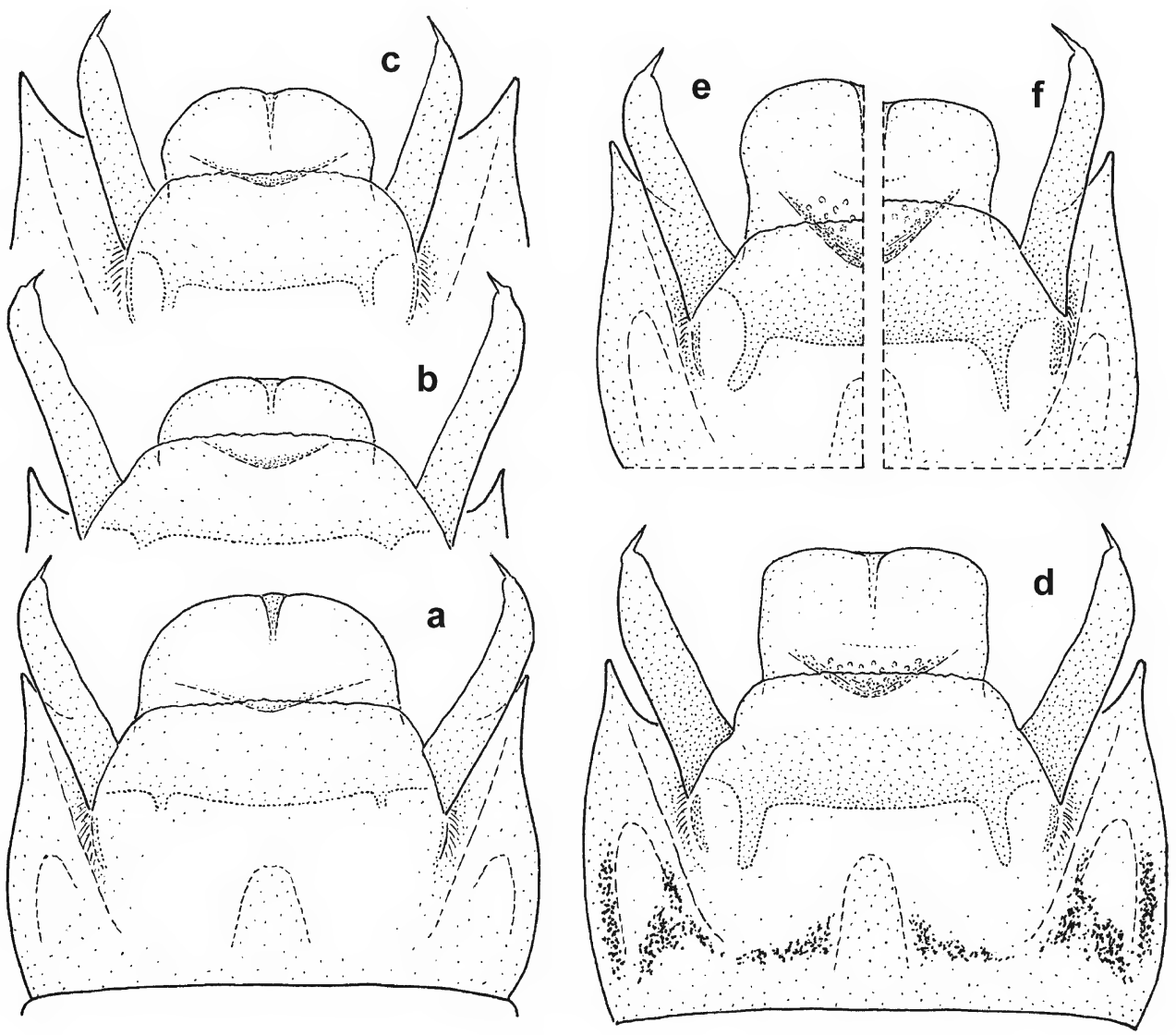


Fig. 5. *Caenis nigricola* n. sp., ♂ genitalia. – **a–c**. Typical specimens. **d–f**. Population west of upper Niger.

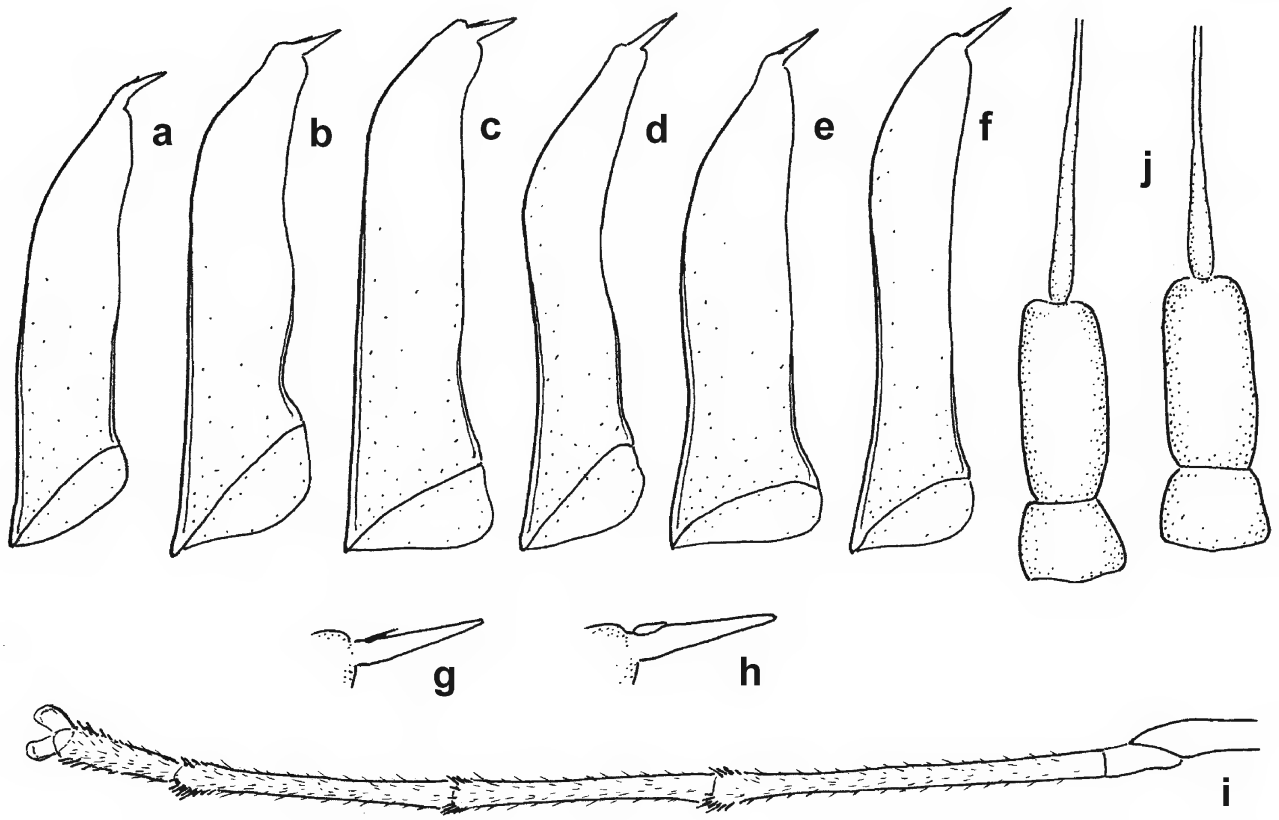


Fig. 6. *Caenis nigricola* n. sp., ♂, typical specimens (a–d, g, i–j), population west of upper Niger (e, f, h). – **a–f**. Different shapes of forcipes. **g**, **h**. Tip of forceps. **i**. Tarsus of fore leg. **j**. Antennal scape, pedicel and base of flagellum.

Material examined

Guinea: River Kokoulou, road Pita–Madina, 25.I.1987, 26 ♂♂. – River Feredougouba [no locality] 4.III.1985, 6 %. – River Bafing, Timbo, 9.I.1986, several ♂♂; 31.I.1987, 10 %. – River Tomine (Rio Corubal), Télimélé, 27.I.1986, 3 ♂♂. – River Kaba (= Little Scarcies), road Faranah–Mamaou, 7.II.1986, 6 %. – River Kaba (= Little Scarcies), Tene, 24.I.1987, 4 %. – River Kolente, south of Kora, 10.II.1986, 1 %. – River Kakrima, Kouri, 15.II.1986, 30 %. – River Konkouré, Linsan near Mourou, 28.I.1987, 1 ♂, 29.I.1987, 5 ♂♂.

Morphological differences

Genitalia and sternum IX as in Fig. 5d–f. Penis longer and more or less quadrate, V-shaped sclerite more pronounced, with a more acute angle. Apophyses of styliger sclerite longer. Forcipes longer on average, but variable in shape (Fig. 6e, f); accompanying spine basally broadened or drop-shaped (Fig. 6h).

Distribution

Guinea and western Mali, in the River Niger and its larger tributaries.

3.6 *Caenis jinjana* Kimmins, 1956 (Figs. 25–27)

Kimmins (1956: 84) (sub *Caenodes jinjana*); Thew (1960: 199) (sub *Caenodes jinjana*); Demoulin (1970: 157) (sub *Caenodes jinjana*); Malzacher (1993: 398).

Material examined

Togo: River Mono, Kpessi, 30.XI.1985, 1 ♂.

Ivory Coast: River Bagoé-Bani; Kouto, 10.III.1976, several ♂♂. – River Bandama, Badikaha, 18.IX.1985, several ♂♂. – River Cavally, Grié (Toulepleu region), 1.II.1988, several ♂♂. – River Cavally, Lieupleu, 3.II.1988, 3 ♂♂. – River Cavally, Tai, 10.II.1988, several ♂♂. – River Cavally + N'ze, Tai, 10.II.1988, several ♂♂. – River Maraoué, Entomokro, 13.II.1988, several ♂♂.

Guinea: River Milo, Boussoulé, 28.III.1984, several ♂♂; 22.XII.1984, several ♂♂; 24.I.1985, 22 ♂♂, 2 ♀♀; 28.III.1985, 6 %; 26.IV.1985, 5 ♂♂; 15.V.1985, several ♂♂; 31.VI.1985, 1 ♂; 22.III.1986, 80 %; 2.IV.1986, several ♂♂; 10.XII.1986, several ♂♂; 22.I.1987, 20 %; 17.II.1987, several ♂♂; 17.III.1987, 24 %; 18.III.1987, 1 %; 7.V.1987, 1 ♂. – River Milo, Konsankoro, 27.IV.1985, 12 ♂♂, several ♀♀. – River Niandan, Sassambaya, 23.XII.1984, 3 ♂♂; 2.III.1985, several ♂♂; 25.IV.1985, several ♂♂; 29.V.1985, 1 ♂, 1 ♀; 21.III.1986, 40 ♂♂, 3 ♀♀; 19.IV.1986, 9 ♂♂; 20.IV.1986, several ♂♂; 14.V.1986, several ♂♂; 15.V.1986,

4 %; 17.VI.1986, 1 ♂; 9.XII.1986, several ♂♂; 10.XII.1986, 13 ♂♂; 19.II.1987, several ♂♂; 18.III.1987, 92 %; 19.III.1987, 12 %; 17.–18.VI.1987, 2–5 %; 27.XI.1987, 1 %; 7.IV.1988, several ♂♂; 12.IV.1988, 10 %; 8.II.1988, 6 %; 5.IV.1988, several ♂♂. – River Niandan, Kissidougou, 22.I.1987, 2 ♂♂. – River Niger, Kouroussa, 27.I.1985, 7 ♂♂. – River Feredougouba, Badala, 4.III.1985, 28 %; 30.III.1985, 3 ♂♂; 13.V.1985, several ♂♂. – River Kaba, Faranah–Mamaou, 7.II.1986, 45 %. – River Kaba, Kaba, 23.I.1987, 20 ♂♂ and 4 ♂♂SI. – River Koumba, near Sita, 26.I.1987, 9 %. – River Konkouré, Linsan near Mourou, 29.I.1987, several ♂♂. – River Konkouré, Acondea, 28.I.1987, 10 ♂♂. – River Bafing, Timbo, 31.I.1987, 4 ♂♂. – River Tinkisso, Dabola, 1.II.1987, several ♂♂. – River Loffa, Macenta, 20.II.1987, several ♂♂; 30.I.1988, several ♂♂. – River Diani, N'zébéla, 31.I.1988, several ♂♂. – River Makona, Bofossou, 29.I.1988, several ♂♂.

Mali: River Marigot, Kaviebo-Kayes, 12.I.1986, several ♂♂. – River Bakoye, Kokofata, 24.X.1986, 3 %.

Redescription

Male imago

Measurements, ratios and colouration

Body length 2.1–2.7 mm; wing length 1.7–2.0 mm; length of fore leg 0.9–1.2 mm; fore femur to fore tibia length = 1.07–1.37; fore tibia to fore tarsus length = 0.91–1.20; fore leg to hind leg length = 0.88–1.03 (1.06 Sassambaya); $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 1.3–1.5 (1.8 Sassambaya) : 0.6–0.9 (1.5 Sassambaya) : 0.7–1.1 (1.4 Sassambaya) : 0.8 : 1.3; body length to length of cercus to length of terminal filum = 1 : 1.5–1.6 : 2. 5–2.6.; terminal filum to cercus length = 1.65–1.75.

Colouration of cuticle: Meso- and metathorax yellowish-brown, head and prothorax lighter, abdomen yellowish-white, cerci white, median notal suture conspicuously brown.

Epidermal pigmentation: Frons and vertex more or less brown, posterior vertex with a dark brown transverse band. Pronotum with a transverse band and a more or less pronounced pattern of brown spots. Additional greyish to blackish-brown pigmentation on prealar bridges, metapleura and hind margin of metanotum, scutellum, prosternum and surrounding of coxae. Abdominal terga I-III with greyish-brown transverse bands, segments IV–VI only with sublateral marks, VII–IX also with the median parts pigmented, sometimes with paramedian longitudinal blackish-brown bands. Paratergal dashes or spots more or less pronounced; if conspicuous, mainly present on segments III–VI. Most populations from Mali, Guinea and Ivory Coast have a reduced pigmentation.

Morphology

Head: Eyes relatively small. Base of antennal flagellum strongly dilated; dilated part usually a little longer than pedicel (Malzacher 1993: fig. 8d).

Thorax: Prosternal triangle isosceles, apically pointed. Segments II–IV of fore tarsus more or less fused.

Abdomen: Tergum II without a finger-like process. Lateral filaments of abdominal segments very short or absent.

Genitalia and sternum IX as in Malzacher (1993: figs. 8b; 9a, b). Penis basally more or less distended, lobes narrow and pointed. Styliger sclerite with thin straight apophyses varying in length. Forcipes long and straight (Malzacher 1993: fig. 9d), apically with a long tuft of spines.

Female imago

Measurements and colouration

Body length 2.7–3.4 mm; wing length 2.3–2.7 mm.

Same colouration as in males. Females are characterized by the arrangement of paratergal dashes in strongly coloured specimens (see above: epidermal pigmentation in male imago).

Morphology

Prosternal triangle wider than in males, trapezoid-shaped or broadly rounded anteriorly.

Egg

Chorion inconspicuously pored, even in SEM pictures, often nearly smooth but with irregularly arranged, very small tubercles (Fig. 27). Two voluminous epithemata (Fig. 25), cap- or turban-shaped; very fine threads with small terminal knobs leading from margins of epithemata, spreading out all over egg-surface, a little sunken in (Figs. 26, 27). One or two micropyles moderate in length, sometimes sligthly bent, situated between equator and epithemata; mouth broadened; a nearly circular and relatively deep sperm guide with a smooth surface (Figs. 25–27).

Larva unknown.

Distribution

Widely distributed and abundant in West Africa (included in 85 samples from 23 localities). In East Africa, *Caenis jinjana* is found in lakes and large rivers of Uganda and Abyssinia.

3.7 *Caenis anteluca*na Malzacher, 1990 (Fig. 7a–i)

Malzacher (1990: 12).

Material examined

Ivory Coast: River Maraoué, Entomokro, 17.VI.1974, several ♂♂.

Guinea: River Tomine, Télimélé, 27.I.1986, 10 ♂♂, 6 ♀♀. – River Koumba, near Sita, 26.I.1987, 52 %. – River Milo, Boussoulé, 2.IV.1986, several ♂♂; 19.IV.1986, several ♂♂; 18.III.1987, 7 %. – River Niandan, Sassambaya, 15.V.1986, 30 %; 18.III.1987, 2 %; 19.III.1987, 27 %; 17.–18.VI.1987, 4 %; 27.XI.1987, 4 %;

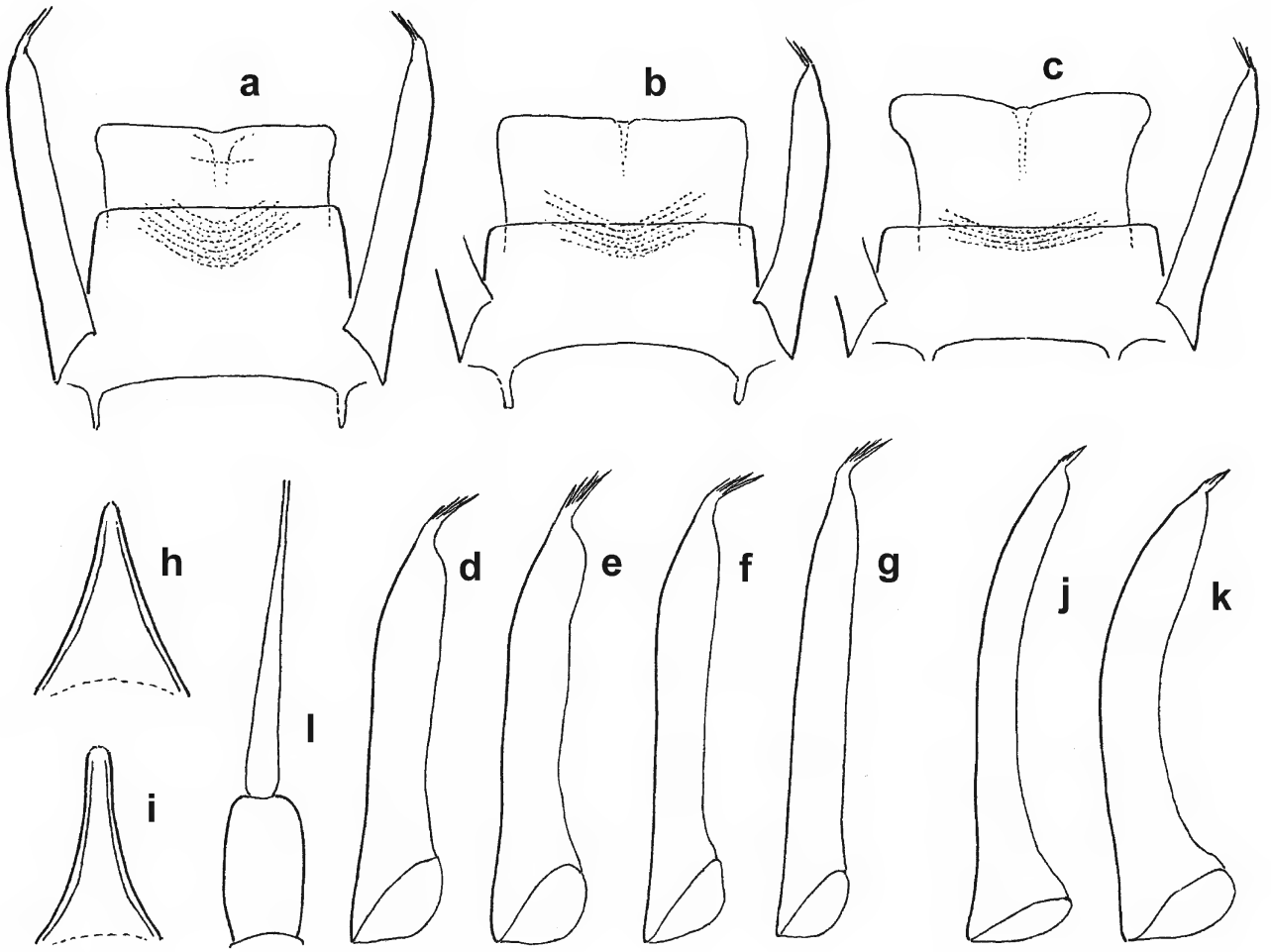


Fig. 7. *Caenis antelucana*, ♂ (a–i), *C. gilliesi*, ♂ (j, k), *C. kohli* n. sp., ♂ (l). – **a–c**. Genitalia, different shapes of styliger. **d–g**, **j**, **k**. Different shapes of forcipes (j and k from the same sample). **h**, **i**. Prosternal triangle. **l**. Antennal pedicel and base of flagellum.

8.II.1988, 10%. – River Konkouré, Linsan near Mourou, 29.I.1987, 2 ♂♂. – River Bafing, Timbo, 31.I.1987, 58%. – River Loffa, Macenta, 30.I.1988, several ♂♂. – River Diani, N'zébéla, 31.I.1988, 14 ♂♂ and 4 ♂♂ SI.

Mali: River Niger, Tienfala, 23.V.1986, 1 ♂. – River Bakoye, Kokofata, 22.VIII.1986, 36%; 6.X.1986, 2%; 24.X.1986, 20%; 7.XI.1986, several ♂♂; 4.VIII.1987, 1%; 20. 11.1987, 1%.

Redescription

Male imago

Measurements, ratios and colouration

Body size and ratios highly variable in populations from different regions: Body length 1.7–2.0 mm (Gambia, Senegal), 2.3–2.8 mm (Guinea: Boussoulé, Nzebela); wing length 1.5–1.6 mm (Gambia, Senegal), 1.8–2.3 mm (Guinea: Boussoulé, Nzebela, Sita); length of fore leg 0.8 mm (Gambia, Senegal), 1.0–1.2 mm (Guinea: Boussoulé, Nzebela); fore femur to fore tibia length = 0.89–0.97 (Gambia, Senegal), 0.82–0.90 (Guinea: Boussoulé), 0.55–0.63 (Guinea: Nzebela); fore tibia to fore tarsus length = 1.15–1.28 (Gambia, Senegal), 1.28–1.46 (Guinea: Boussoulé, Nzebela); fore leg to hind leg length = 1.02–1.15 (Gambia, Senegal), 1.11–1.22 (Guinea: Boussoulé), 1.51–1.55 (Guinea: Nzebela); $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 1.2–1.7 : 1.0–1.3 : 1.0–1.2 : 1.0–1.3; body length to length of cercus to length of terminal filum = 1 : 1.6 : 2.5; terminal filum to cercus length = 1.6.

Colouration of cuticle: Very light, thorax yellow to yellowish-orange, other parts white.

Epidermal pigmentation: Frons, vertex and fore margin of pronotum more or less greyish-brown. Metanotum and abdominal terga with greyish-brown transverse bands, often more or less interrupted medially. Prosternal triangle often with blackish-brown pigment. Sutures of metasternum often strongly pigmented, forming an H-shaped figure. Pigmentation more or less reduced in most populations.

Morphology

Head: Base of antennal flagellum strongly dilated; dilated part 1.5–2 times pedicel length (MALZACHER 1990: fig. 7d).

Thorax: Prosternal triangle equilateral or isosceles, apically pointed or with rounded or cut tip (Fig. 7h, i).

Abdomen: Tergum II without a finger-like process. Lateral filaments of abdominal segments very short or absent.

Genitalia and sternum IX as in MALZACHER (1990: fig. 7a, b). Penis lobes short and broadly triangular, or nearly absent, penis shape rarely rectangular or quadrate; ventrally with about 4–6 slightly sclerotized transverse folds (Fig. 7a–c). Styliger sclerite variable in length; apophyses very thin, also variable in length, sometimes absent. Forcipes long and straight, sides more or less parallel (Fig. 7d–g, MALZACHER 1990: fig. 7c), apically with a short tuft of spines.

Female imago and larva unknown.

Distribution

Caenis antelucana and *C. cibaria kunda* have a similar distribution range. Each of them are included in 28 samples, in 17 samples from 7 localities they are accompanied by each other. Other species can also often be found together with *C. antelucana*: *C. brevipes* in 20 samples from 7 localities, *C. berneri* in 23 samples from 9 localities and *C. jinjana* in 18 samples from 8 localities. *C. antelucana* is recorded for the first time from Gambia and Senegal.

3.8 *Caenis jinjanoides* **n. sp.**
(Figs. 8a, b; 9e–j, 28, 29)

Holotype, ♂ (on microslide): **Guinea**, River Bafing, Timbo, 31.I.1987.

Paratypes: Same data as holotype, 70 ♂♂, 4 ♀♀.

Other material: **Guinea**: River Milo, Boussoulé, 24.I.1985, 18 ♂♂, 6 ♀♀; 28.III.1985, 16 %; 31.VI.1985, 62 %; 22.I.1987, 14 %. – River Feredougouba, Badala, 4.III.1985, 14 %. – River Kaba, Faranah–Mamaou, 7.II.1986, 2 ♂♂. – River Kolente, Kolente, 9.II.1986, 1 %. – River Kolente, Kora, 10.II.1986, 6 %. – River Kakrima, Kouri, 15.II.1986, 16 % incl. 8 ♀♀. – River Kokoulou, road Pita-Madina, 25.I.1987, 15 %. – River Niandan, Sassambaya, 5.VI.1987, 5 ♂♂. – River Koumba, near Sita, 26.I.1987, 4 %. – River Tinkisso, Dabola, 30.I.1987, 35 ♂♂, 4 ♀♀; 1.II.1987, 3 ♂♂. – River Diani, N'zébéla, 31.I.1988, 1 ♂. – **Ivory Coast**: River Cavally, Tiboto-Grabo, 11.II.1988, 16 ♂♂.

Etymology

The species was named 'jinjanoides' because of its similarities with *Caenis jinjana*, e. g. very short fore tibiae.

Description

Male imago

Measurements, ratios and colouration

Body length 1.8–2.3 mm (Guinea, Milo), 2.2–2.9 mm (Guinea, Kokoulou); wing length 1.6–1.8 mm (Guinea, Milo), 2.0–2.3 mm (Guinea, Kokoulou); length of fore leg 1.0–1.2 mm (Guinea, Milo), 1.2–1.4 mm (Guinea, Kokoulou); fore femur to fore tibia length = 1.19–1.32 (Guinea, Milo), 0.94–1.09 (Guinea, Kokoulou); fore tibia to fore tarsus length = 0.95–1.12 (Guinea, Milo), 1.00–1.17 (Guinea, Kokoulou); fore leg to hind leg length = 1.03–1.18 (Guinea, Milo), 1.19–1.23 (Guinea, Kokoulou); $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 1.2–2.1 : 0.9–1.6 : 1.0–1.6 : 1.0–1.7; body length to length of cercus to length of terminal filum = 1 : ±1.9 : ±2.7; terminal filum to cercus length = ±1.45.

Colouration of cuticle: Meso- and metathorax yellowish-brown, median notal suture often brown, head and prothorax lighter, abdomen yellowish-white, cerci white.

Epidermal pigmentation: Frons and vertex greyish-brown. Pronotum grey, with blackish-brown margins and a median transverse line. Pleura with spots and dashes. Sutures and medio-longitudinal line of mesosternum often pigmented. Abdominal terga with blackish grey transverse bands, centrally lighter on posterior terga; lateral marks often with central brighter areas. In strongly coloured specimens (e. g. from River Bafing) transverse bands or lateral marks, as well as blackish lateral dashes, are also observed on abdominal sterna.

Morphology

Head: In populations with strongly coloured specimens (River Bafing) eyes often a little smaller than in populations with lighter specimens (River Milo). Base of antennal flagellum strongly dilated; dilated part about half as wide as pedicel.

Thorax: Prosternal ridges narrow, forming a broad, apically rounded triangle or a trapezoid structure with straight or concave sides (Fig. 9j).

Abdomen: Tergum II without a finger-like process. Lateral filaments of abdominal segments very short or absent.

Genitalia and sternum IX as in Fig. 8a, b. Base of penis broadened, lobes short, more or less triangular and apically rounded. Styliger sclerite with short or very short apophyses. Forcipes of moderate length (variable), in most cases medially more or less abruptly bent (Fig. 9e–i), apically with a long tuft of spines. Forcipes and genital sclerites slightly brownish. Sternite IX in strongly pigmented specimens with blackish deposits as in Fig. 8a.

Female imago

Measurements and colouration

Body length 3.4–3.8 mm; wing length 2.5–2.7 mm.

Same colouration as in males. Females are characterized by the colouration of the mesosternum in strongly coloured specimens.

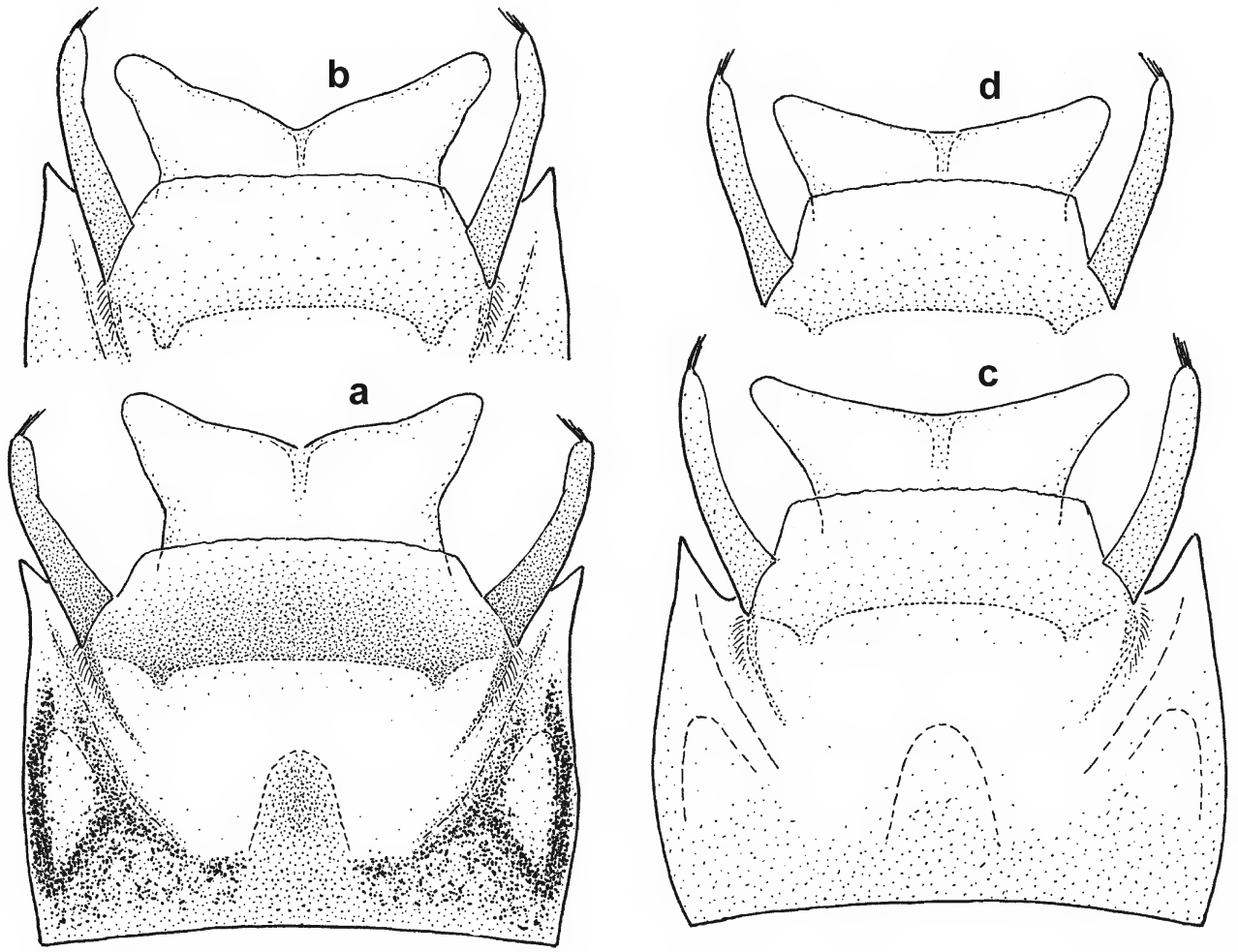


Fig. 8. *Caenis* spp., ♂ genitalia. – **a**, **b**. *C. jinjanoides* n. sp. **c**, **d**. *C. kohli* n. sp.

Morphology

Prosternal triangle very broad, trapezoid-shaped.

Egg

Epithemata absent (Fig. 28). Chorion conspicuously structured, with circular, penta- or hexagonal fields, their elevated margins broadly bulged (Fig. 29). One or two micropyles of moderate length situated in the equatorial plane; mouth region narrowed, bordered by small pores; sperm guide small and circular with a diminished chorion structure (Fig. 29).

Larva unknown.

Differential diagnosis

Caenis jinjanoides n. sp. is similar to the species of the *C. brevipes* group and to *C. jinjana* (see discussion, chapter 5). For the differences see couplets 10 and 11 in the key below (chapter 4).

Distribution

C. jinjanoides seems to be restricted to Guinea and the south-western Ivory Coast. The species is accompanied by *C. gilliesi* in 14 of 17 samples from 13 localities.

3.9 *Caenis brevipes* Kimmins, 1956 (Figs. 30–33)

Kimmins (1956: 84); Thew (1960: 199) (sub *Caenomedea brevipes*); Demoulin (1970: 159) (sub *Caenomedea brevipes*); Malzacher (1993: 406). – Including *Caenis brevipes occidentalis* Malzacher, 1993 (see discussion, chapter 5).

Material examined

Ivory Coast: River Maraoué, Entomokro, 17.VI.1974, several ♂♂.

Guinea: River Bafing, Timbo, 31.I.1987, 6 %. – River Milo, Boussoulé, 17.II.1987, several ♂♂; 18.III.1987, 14 %. – River Niandan, Sassambaya, 20.IV.1986, several ♂♂; 15.V.1986, 30 %; 17.–18.VI.1986, 26–42 %; 19.III.1987, 8 %; 26.XI.1987,

several ♂♂; 27.XI.1987, 80 %; 12.IV.1988, 3 ♂♂; 8.II.1988, 4 %; 7.IV.1988, several ♂♂; 16.V.1988, several ♂♂. – River Koumba, near Sita, 26.I.1987, 11 %.

Mali: River Niger, Tienfala, 21.V.1986, 80 %; 23.V.1986, 86 %; 27.V.1986, 97 %; 28.VIII.1986, 84 %. – River Senegal, Chutes du Felou, 13.I.1986, 6 ♂♂. – River Bakoye, Kokofata, 24.X.1986, 24 %; 8.VII.1986, several ♂♂; 6.VIII.1986, 4 ♂♂; 9.II.1987, 1 ♂; 2.VII.1987, several ♂♂; 23.VIII.1987, 46 %; 6.X.1987, 97 %; 4.VIII.1987, 45 %; 20.XI.1987, 80 %.

Redescription

Male imago

Measurements, ratios and colouration

Body size and ratios between populations from different regions are highly variable: Body length 2.2–3.7 mm (Sudan: 2.2–2.8 mm; Guinea, Niandan: 2.5–3.3 mm; Abyssinia: 2.8–3.7 mm); wing length 1.8–3.3 mm (Gambia: 1.8–2.0 mm; Guinea, Niandan: 1.9–2.6 mm; Abyssinia: 2.6–3.3 mm); length of fore leg 1.3–2.3 mm (West Africa: 1.3–1.7 mm, Abyssinia: 1.7–2.3 mm); fore femur to fore tibia length = 0.47–0.95 (Kenya: 0.47–0.63; Guinea, Niandan: 6.2–7.8; Tanzania: 0.72–0.74; Mali: 6.4–8.8; Gambia: 7.1–9.5); fore tibia to fore tarsus length = 1.32 (Tanzania) – 1.92 (Gambia); fore leg to hind leg length = 1.18–1.85 (Gambia: 1.18–1.30; Guinea, Niandan: 1.26–1.50; Abyssinia: 1.53–1.85); $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 1.4–3.0 : 1.0–1.7 : 0.6–1.4 : 1.0–1.8; body length to length of cercus to length of terminal filum = 1 : ±2.3 : ±3.3; terminal filum to cercus length = ±1.45.

Colouration of cuticle: Meso- and metathorax yellowish-brown or reddish-brown, head and prothorax distinctly lighter, abdomen yellowish-white or white.

Epidermal pigmentation: Head more or less brown dorsally, vertex with a dark brown transverse band. Pronotum with two paramedian spots and different marks on its lateral parts, sometimes only with two marks at the fore corners. Additional greyish to blackish-brown pigmentation is found on prealar bridges, metapleura and hind margin of metanotum, scutellum, prosternum, and surroundings of coxae. Abdominal terga with greyish-brown transverse bands which are more or less interrupted in the middle. Paratergal and parasternal blackish-brown dashes or spots present. On segments III–VI the parasternal dashes or spots are more pronounced, on segments VII–IX both are of similar intensity, forming more or less parallel bands in lateral view. Margins of fore femora and fore tibiae greyish. Many populations from West Africa show a more or less reduced pigmentation.

Morphology

Head: Base of antennal flagellum dilated; dilated part as long as or a little longer than pedicel and at least as wide as half of the pedicel width (Malzacher 1993: fig. 14e, f).

Thorax: Prosternal triangle isosceles, with slightly concave sides, apically pointed or rounded. Fore tarsus apically with small bristles beginning at the apical end of segment III.

Abdomen: Tergum II without a finger-like process. Lateral filaments of abdominal segments short or slightly elongated.

Genitalia and sternum IX as in Malzacher (1993: fig. 14a, b). Penis lobes very long and of different shape. Apophyses of styliger sclerite short and inconspicuous, sometimes a little longer. Forcipes long and more or less regularly bent, apically with a tuft of spines of moderate length (Malzacher 1993: fig. 14c). Forcipes and genital sclerites more or less brownish tinted.

Female imago

Measurements and colouration

Body length 3.8–5.0 mm; wing length 3.8–4.3 mm.

Same colouration as in males. Females are characterized by the shape and the arrangement of paratergal and parasternal dashes in combination with the body size.

Morphology

Prosternal triangle wider than in males.

Egg

Chorion, even in SEM pictures, inconspicuously pored, often nearly smooth. Two broad epithemata, cap-shaped with small knobs, often covering a large and irregular area around the poles (Figs. 30, 31). Two elongated micropyles (Fig. 30), occasionally a little bent towards the equatorial plane, with broadened mouth and a flat round sperm guide (Fig. 33). In the specimen shown in Fig. 32 a part of the epithemal threads have become uncoiled by attaching their knobs to another egg.

Larva unknown.

Distribution

Senegal, Gambia, Guinea, Mali and Ivory Coast, with some distribution gaps. In big rivers the species is often abundant. *C. brevipes* was often collected together with *Caenis berneri*, *C. cibaria* and *C. antelucana*. It also occurs in Sudan, Abyssinia, Kenya, Uganda, and Tanzania.

3.10 *Caenis kohli* **n. sp.**
(Figs. 7l; 8c,d; 9a–d, 34–36)

Holotype, ♂ (on microslide): **Guinea**, River Tomine (Rio Corubal), Télimélé, 27.I.1986.

Paratypes: Same data as holotype, 4 ♂♂ and 1 ♂ SI, 16 ♀♀.

Other material: **Guinea**, River Konkouré, Linsan near Mourou, 29.I.1987, 5 ♂♂ and 5 ♂♂ SI, 10 ♀♀.

Etymology

The new species is dedicated to Dr. HELMUT KOHL, former chancellor of the Federal Republic of Germany, for his merits in the reunification of Germany.

Description

Male imago

Measurements, ratios and colouration

Body length 3.6–4.2 mm; wing length 2.7–3.1 mm; length of fore leg 2.0–2.4 mm; fore femur to fore tibia length = 0.83–0.94; fore tibia to fore tarsus length = 1.19–1.35; fore leg to hind leg length = 1.16–1.33; $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 2.0–2.3 : 1.5–1.8 : 1.3–1.7 : 1.3–1.7; body length to length of cercus to length of terminal filum = 1 : ±1.8 : ±2.6; terminal filum to cercus length = ±1.44.

Colouration of cuticle: Meso- and metathorax yellowish-brown, head, prothorax and abdomen light brownish.

Epidermal pigmentation: Head grey dorsally, vertex with two transverse blackish bands, base of eye black; bases of antennae grey, and rudiments of maxillae apically with intense black spots (Fig. 9d). Pronotum grey, anterolateral with two transverse blackish dashes; fore coxae and pleura with grey marks, blackish lines running from the base of the strongly pigmented prosternal triangle towards the lateral margins. Besides diffuse greyish areas, blackish pigment on mesothorax are concentrated along the sutures and on the middle and hind coxae. Abdominal terga with greyish transverse bands which more or less interrupted in the middle. Anterior sterna often also with greyish pigment. Parasternal dashes mainly on segments II–VI, other marginal pigmentation inconspicuous or absent.

Morphology

Head: Base of antennal flagellum dilated; dilated part distinctly longer and about half as wide as pedicel (Fig. 7l).

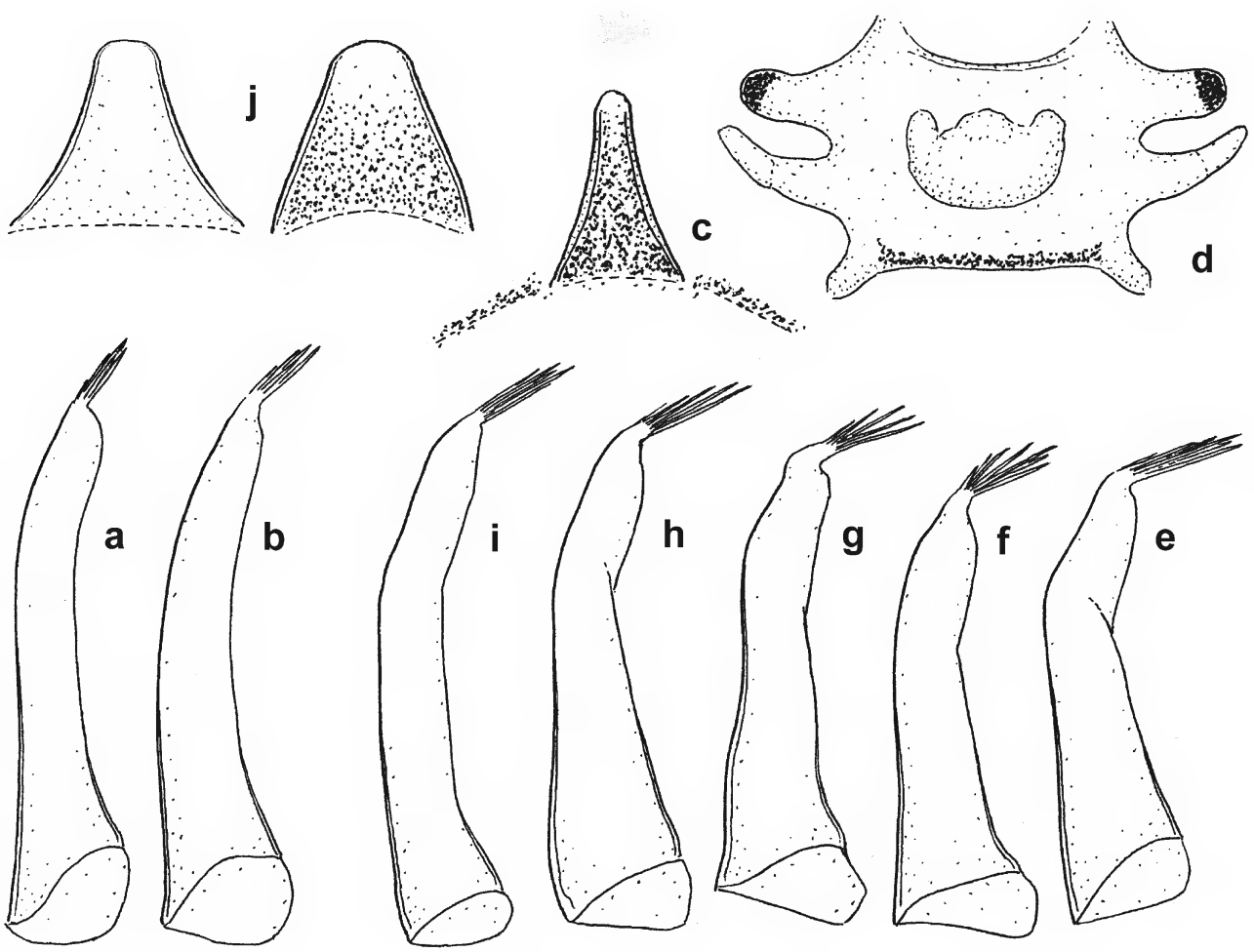


Fig. 9. *Caenis kohli* n. sp., ♂ (a–d), *C. jinjanoides* n. sp., ♂ (e–j). – **a**, **b**, **e–i**. Different shapes of forcipes. **c**. Prosternal triangle. **d**. Rudiments of mouthparts. **j**. Prosternal triangle.

Thorax: Prosternal triangle more or less elongated and narrow, with slightly concave sides and a rounded tip (Fig. 9c). Fore tarsus apically with small bristles, beginning at the apical end of segment IV.

Abdomen: Tergum II without a finger-like process. Lateral filaments of abdominal segments short.

Genitalia and sternum IX as in Fig. 8c, d. Sides of penis slightly concave, lobes slender and apically rounded. Apophyses of styliger sclerite short and inconspicuous. Forcipes moderate in length and more or less regularly bent, apically with a tuft of spines also moderate in length (Fig. 9a, b). Forcipes slightly brownish tinted.

Female imago

Measurements and colouration

Body length 4.5–5.7 mm; wing length 3.5–4.2 mm.

Colour pattern as in males, but dorsally with stronger pigmentation, e. g. abdominal terga totally pigmented. Females are characterized by black spots on the maxillary rudiments in combination with body size in West African specimens.

Morphology

Prosternal triangle wider than in males.

Egg

Chorion with a very fine plush-like structure (Figs. 35, 36). One very flat epithema, often with an eccentric position towards the pole (Fig. 34). Epithema of coiled-rope-type (Fig. 35), i. e. a number of threads are rolled up like ropes, their large terminal knobs (4–6) situated in the centre of the coil. Threads form loops by turning about (Fig. 35, right) (see discussion, chapter 5). One micropyle, situated in the equatorial plane; mouth not broadened; sperm guide small, without any surface structure (Fig. 36).

Larva unknown.

Differential diagnosis

Caenis kohli n. sp. is similar to *C. brevipes* and *C. berneri*. For the differences see couplets 12 and 13 in the key below (chapter 4).

Distribution

Only a few records from western Guinea.

3.11 *Caenis berneri* Kimmins, 1955 (Fig. 10)

Kimmins (1955: 879); Thew (1960: 201); Demoulin (1970: 150); Malzacher (1993: 408).

Material examined

Ivory Coast: River Cavally, Tiboto-Grabo, 22.II.1978, 12 ♂♂,

Guinea: River Bafing, Timbo, 31.V.1983, 4 ♂♂; 31.I.1987, several ♂♂. – River Tomine, Télimélé, 27.I.1986, 7 ♂♂ SI. – River Dubreka, Dubreka, 10.II.1986, several ♂♂. – River Milo, Boussoulé, 2.IV.1986, several ♂♂; 21.IV.1986, 2 ♂♂; 22.I.1987, several ♂♂; 18.III.1987, 76 %. – River Niandan, Sassambaya, 15.V.1986, 20 %; 17.–18.VI.1986, 34–46 %; 10.XII.1986, 2 ♂♂; 19.III.1987, 51 %; 27.XI.1987, 15 %; 12.IV.1988, 85 %; 8.II.1988, 76 %; 16.V.1988, several ♂♂. – River Niandan, Kissidougou, 22.I.1987, 1 ♂. – River Konkouré, Linsan near Mourou, 29.I.1987, several ♂♂. – River Kaba, Kaba, 23.I.1987, 3 ♂♂. – River Kaba, Tene, 24.I.1987, 1 ♂. – River Makona, Nangoa, 19.II.1987, 1 ♂. – River Diani, N'zébéla, 31.I.1988, several ♂♂.

Mali: River Niger, Tienfala, 21.V.1986, 20 %; 23.V.1986, 32 % (very pale); 27.V.1986, 3 %. – River Bakoye, Kokofata, 22.VIII.1986, 3 ♂♂; 28.VIII.1986, 10 %; 24.X.1986, 25 %; 23.VIII.1987, 10 %; 6.X.1987, several ♂♂; 20.XI.1987, several ♂♂.

Redescription

Male imago

Measurements, ratios and colouration

Body length 1.8–2.9 mm; wing length 1.4–2.6 mm (Guinea, Niandan and Mali, Niger: 1.4–1.9 mm; East Africa and Guinea, Kaba: 2.1–2.6 mm); length of fore leg 1.0–1.7 mm (Guinea, Niandan and Mali, Niger: 1.0–1.3 mm; East Africa and Guinea, Kaba: 1.4–1.7 mm); fore femur to fore tibia length = 0.48–0.76 (Guinea, Niandan and Mali, Niger: 0.57–0.76; East Africa and Guinea, Kaba: 0.48–059); fore tibia to fore tarsus length = (1.36) 1.45–1.79 (1.98); fore leg to hind leg length = 1.38–1.81 (Guinea, Niandan and Mali, Niger: 1.38–1.58; East Africa and Guinea, Kaba: 1.65–1.81); $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 1.7–2.8 : 0.8–1.9 : 0.8–1.6 : 0.8–1.7; body length to length of cercus to length of terminal filum = 1 : ±2.1 : ±3.3; terminal filum to cercus length = ±1.60.

Colouration of cuticle: Meso- and metathorax reddish or chocolate brown, head and prothorax light-brown, abdomen yellowish-white or white, tergite X with conspicuous brown sclerites.

Epidermal pigmentation: Head more or less grey dorsally, vertex occasionally with a dark transverse band. Pronotum with two paramedian spots and anterolateral marks which differ in shape and intensity. Additional greyish pigmentation on mesonotal sutures, scutellum, prealar bridges and metapleura. Metanotum sometimes with a longitudinal median blackish-grey line. Abdominal terga with greyish transverse bands, on terga VI–IX more or less interrupted medially. Usually no conspicuous paratergal dashes or spots. Pigmentation strongly reduced in many populations.

Morphology

Head: Base of antennal flagellum only slightly dilated; dilated part shorter than pedicel and about one-fourth as

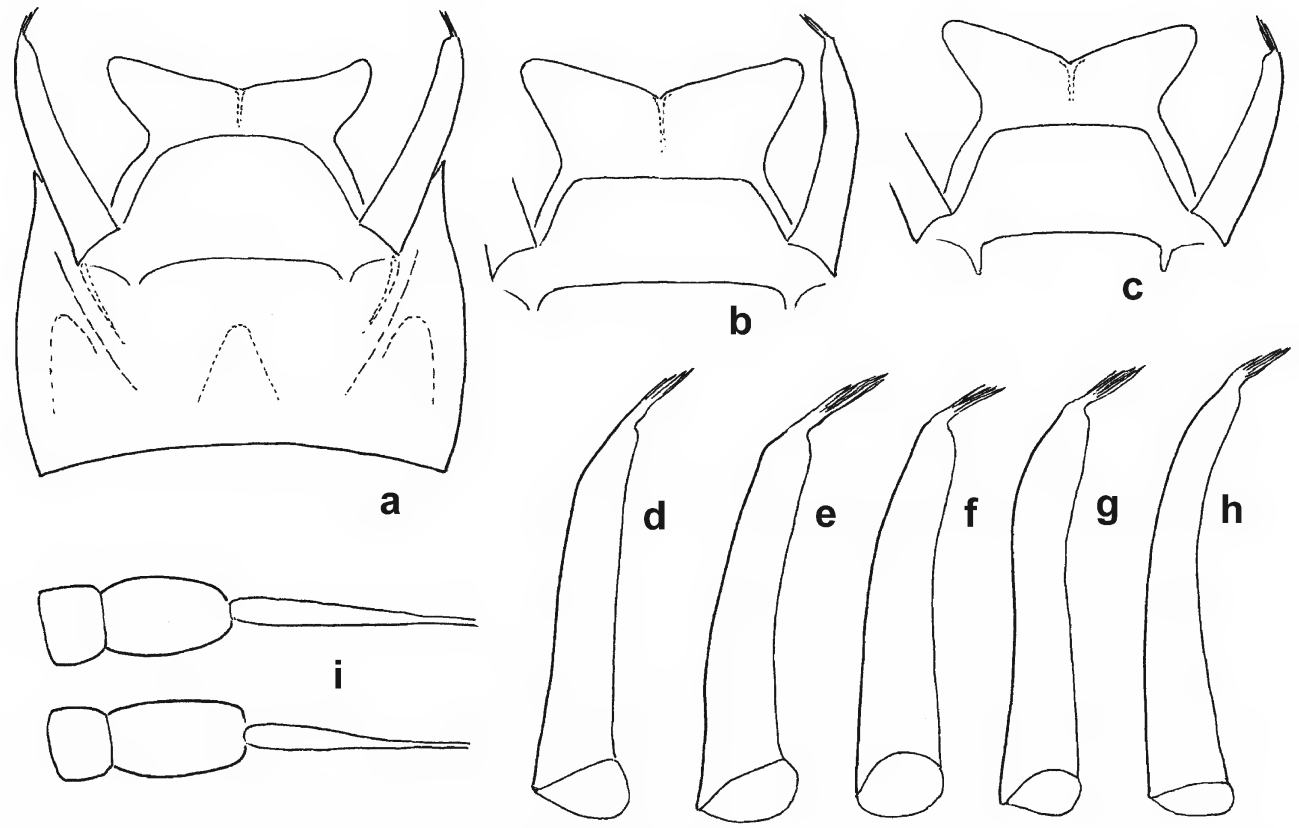


Fig. 10. *Caenis berneri*, ♂. – **a–c**. Genitalia, different shapes of styliger. **d–h**. Different shapes of forcipes. **i**. Antennal scape, pedicel and base of flagellum.

wide (MALZACHER 1993: fig. 15c); the dilated part is longer and about one-third as wide as pedicel in populations of West Africa (Fig. 10i).

Thorax: Prosternal triangle apically broadly rounded or cut.

Abdomen: Tergum II without a finger-like process. Lateral filaments of abdominal segments short.

Genitalia and sternum IX as in Fig. 10a–c and MALZACHER (1993: fig. 15a, b). Penis lobes triangular, variable, distinctly shorter than in *Caenis brevipes*. Styliger with rounded hind margin (East Africa) or more or less trapezoid with rounded corners (most specimens from West Africa). Apophyses of styliger sclerite short or absent, longer in some populations of West Africa. Forcipes relatively short, straight or only slightly bent, apically with a tuft of spines of moderate length, occasionally longer (Fig. 10d–h and MALZACHER 1993: fig. 14c). Forcipes and genital sclerites more or less brownish. A broadly triangular shape of central sclerite is observed in strongly coloured specimens. The regularly rounded sides of segment IX are converging posteriorly in most East African specimens, forming medially bent posterolateral spines; this characteristic shape is not found in West African populations.

No female imago was available for this study; according to KIMMINS (1955) it has a wing length of 2.6–3.2 mm. Larva unknown.

Distribution

Similar to that of *Caenis brevipes* but more records. Furthermore known from Kenya and Tanzania.

3.12 *Caenis pallida* Malzacher, 1990
(Fig. 11a–g)

MALZACHER (1990: 16).

Material examined

Guinea: River Milo, Boussoulé, 19.IV.1986, 3 ♂♂.

Redescription

Male imago

Measurements, ratios and colouration

Body length 3.7–4.2 mm; wing length 2.8–3.7 mm; length of fore leg 2.5–3.0 mm; fore femur to fore tibia

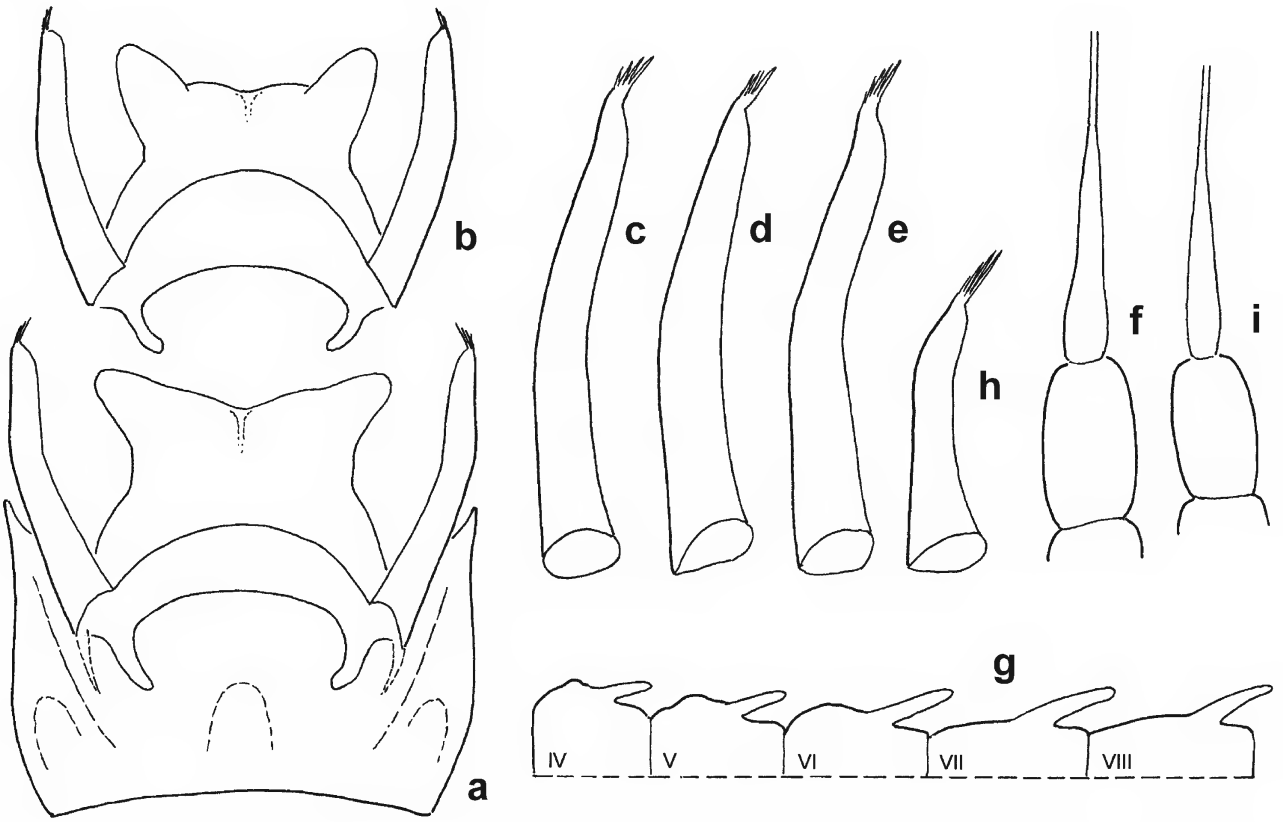


Fig. 11. *Caenis pallida*, ♂ (a–g), *C. orthostilata* n. sp., ♂ (h, i). – **a**, **b**. Genitalia, different shapes of styliger. **c–e**, **h**. Different shapes of forcipes. **f**, **i**. Antennal scape, pedicel and base of flagellum. **g**. Margins of abdominal segments IV–VIII with lateral processes.

length = 0.56–0.65 (East Africa), 0.70–0.72 (Guinea: River Milo); fore tibia to fore tarsus length = 1.45–1.83; fore leg to hind leg length = 1.56–1.68 (East Africa), 1.41–1.43 (Guinea: River Milo); $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 1.6–2.8 : 1.2–1.8 : 1.3–1.7 : 1.4–2.1; body length to length of cercus to length of terminal filum = 1 : ±2.3 : ±3.0; terminal filum to cercus length = ±1.38.

Colouration of cuticle: Meso- and metathorax yellowish-brown or orange, other parts yellowish-white or white.

Epidermal pigmentation: Head more or less grey dorsally, vertex sometimes with a greyish transverse band. Pronotum with diffuse anterolateral marks, occasionally with two paramedian spots. Abdominal terga III–VII with more or less visible greyish transverse bands, terga I, II, VIII and IX only with lateral marks. Usually no conspicuous paratergal dashes or spots.

Morphology

Head: Base of antennal flagellum dilated; dilated part longer than pedicel and nearly half as wide; dilatation a little narrowed in its middle part (Fig. 11f and MALZACHER 1990: fig. 10c).

Thorax: Prosternal triangle isosceles, with straight or slightly concave sides; inconspicuous in East African specimens but with strong and broad ridges in specimens from Guinea. Segments II–IV of fore tarsus nearly totally fused (MALZACHER 1990: fig. 10d).

Abdomen: Tergum II without a finger-like process. Lateral filaments of abdominal segments IV–VIII elongated (Fig. 11g).

Genitalia and sternum IX as in Fig. 11a, b and MALZACHER (1990: fig. 10a). Penis lobes triangular and variable in width; dorsal side of penis medially with a small brown sclerite. Hind margin of styliger semi-elliptical. Styliger sclerite with a concave anterior margin, apophyses long and bent medially. Forcipes long, more or less abruptly bent medially, apical part slightly S-shaped, with a tuft of 5–6 short spines (Fig. 11c–e and MALZACHER 1990: fig. 10b). Forcipes and apophyses of styliger sclerite brownish.

Female imago and larva unknown.

Distribution

Just a single West African record from eastern Guinea. Furthermore known from Abyssinia and Tschad, River Schari.

3.13 *Caenis orthostilata* **n. sp.**
(Figs. 11h–i, 12)

Holotype, ♂ (on microslide): **Mali**, River Bakoye, Kokofata, 23.VIII.1987.

Paratypes: Same data as holotype, 50 ♂♂ and 12 ♂♂ SI, 2 ♀♀ and 2 ♀♀ SI; same locality, but 4.VIII.1987, 50 ♂♂.

Other material: **Mali**, River Senegal, Chutes du Felou, 13.I.1986, several ♂♂.

Etymology

The species name 'orthostilata' refers to the straight forcipes, in contrary to that of *Caenis pallida*.

Description

Male imago

Measurements, ratios and colouration

Body length 3.2–3.6 mm; wing length 2.1–2.5 mm; length of fore leg 2.0–2.2 mm; fore femur to fore tibia length = 0.54–0.58; fore tibia to fore tarsus length = 1.75–1.94; fore leg to hind leg length = 1.42–1.55; $1^{st} : 2^{nd} : 3^{rd} : 4^{th} : 5^{th}$ fore tarsal segments length = 1 : 2.6–2.7 : 1.4–1.7 : 1.1–1.5 : 1.9–2.1.

Colouration of cuticle: Meso- and metathorax yellowish-brown, other parts yellowish-white to white.

Epidermal pigmentation: Hind margin of head dark blackish-brown; rudiments of maxillae apically with black spots; vertex with a transverse band, fore margin of frons and clypeus and lateral parts of pronotum greyish-brown; sutures of mesonotum, metanotum and pleura more or less blackish-brown. Abdominal terga with transverse greyish bands which are more or less interrupted in the middle; with strong paratergal dashes.

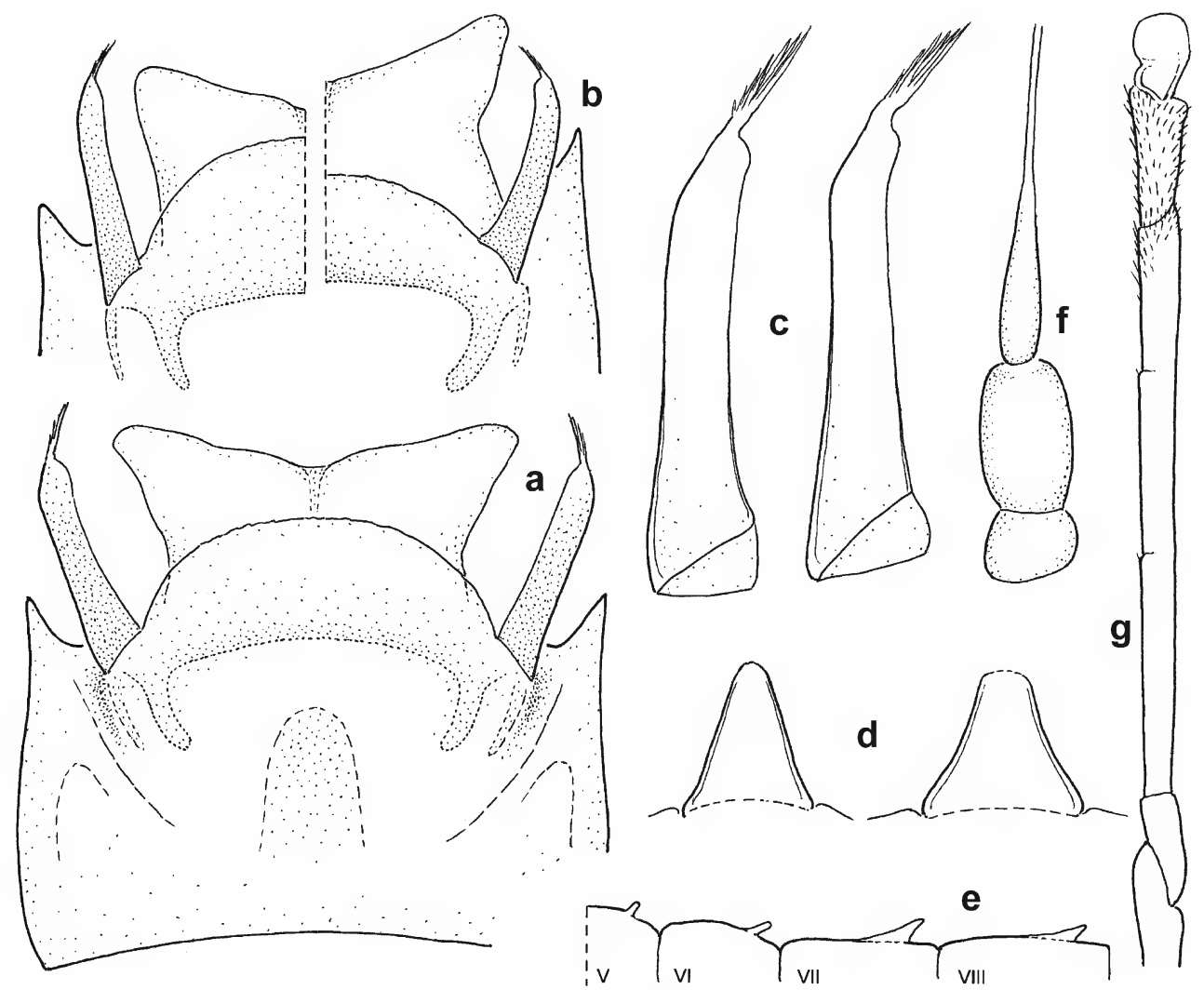


Fig. 12. *Caenis orthostilata* n. sp., ♂. – **a**, **b**. Genitalia, different shapes of styliger. **c**. Different shapes of forcipes. **d**. Prosternal triangle. **e**. Margins of abdominal segments V–VIII with lateral processes. **f**. Antennal scape, pedicel and base of flagellum. **g**. Tarsus of fore leg.

Morphology

Head: Base of antennal flagellum strongly dilated; dilated part 1.5–2.0 times length of pedicel; pedicel relatively short with rounded sides, about twice as long as scape and about 1.7 times as long as wide (Fig. 12f).

Thorax: Prosternal triangle with a rounded tip or pointed, broader in specimens from Senegal (Fig. 12d). Segments II–IV of fore tarsus ventrally more or less fused (Fig. 12g).

Abdomen: Tergum II without a finger-like process. Lateral filaments of abdominal segments short, a little longer on segment VII, triangular on segments VII and VIII (Fig. 12e).

Genitalia and sternum IX as in Fig. 12a, b. Penis lobes triangular; dorsal side of penis medially with a small brown sclerite. Styliger sclerite with concave anterior margin, apophyses long and bent medially (stronger bent in specimens from Senegal, see Fig. 12b, right). Forceps apically with a tuft of long spines (Fig. 12c) and covered with trichomes sticking out of the surface.

Female imago

Measurements and colouration

Body length 4.4–4.7 mm; wing length 2.8–3.2 mm.

Same colouration as in males.

Morphology

Base of antennal flagellum weaker dilated than in males; prosternal triangle broader, abdominal segments V–VII with posterolateral processes distinctly longer than in males.

Egg

Chorion very inconspicuously pored. Two flat epithemata. One long and thin micropyle.

Larva unknown.

Differential diagnosis

Caenis orthostilata n. sp. is similar to *C. pallida* (see discussion, chapter 5). For differences see couplet 8 in the key below (chapter 4).

Distribution

Only two records known from southwestern Mali.

3.14 Caeninae gen. sp. (Figs. 37–39)

Material examined

Guinea: River Tomine, Télimélé, 27.I.1986, 6 ♀♀. – River Bafing, Timbo, 31.I.1987, 23 ♀♀.

Description

Female imago

Measurements and colouration

Body length 3.5–3.7 mm; wing length 2.3–2.6 mm.

Colouration of cuticle: Mesothorax and basal part of cerci yellowish-brown, other parts yellowish-white to white.

Epidermal pigmentation: Head, pronotum and transverse bands on abdominal terga and sterna evenly blackish grey or greyish; sutures of mesonotum and ridges of prosternum with blackish-brown margins; mesosternum with conspicuous black sutures.

Morphology

Body and particularly abdomen thin and slender, segments VIII and IX more elongated than in other species. Prosternal ridges forming a trapezoid. Lateral filaments of abdomen very short.

Egg

Very elongated, in some specimens even more than shown in Fig. 37. One epithema with small knobs (Fig. 38) of variable shape, often pointed. Chorion with an irregular net of broad elevated bands; small fields in intermediate areas with marginal pores (Fig. 39). One long and thin micropyle situated in the middle of the egg; mouth somewhat broadened, sperm guide lacking; course of micropyle channel often disturbed and covered over by the elevations (Fig. 39).

4 Key to the male Caenidae of West Africa

1 Prosternum narrow, sclerotized margins forming a triangle or trapezoid. Coxae contiguous. ..... **(Caeninae) 2**

– Prosternum broad. Coxae widely separated (Malzacher & Staniczek 2006: fig. 1e). ..... **(Madecocercinae)** (for determination of West African Madecocercinae see Malzacher & Staniczek 2006)

2 Forcipes short, apically rounded (Figs. 1f–n, 3c). **3**

– Forcipes apically with spines or tufts of spines (e. g. Figs. 6a–f, 9e–i). **4**

3 Body length less than 2.5 mm. Forcipes basally narrowed, apically often with a small bump (Fig. 3c). Basolateral sclerites of styliger clearly visible, often forming a shallow groove (Fig. 3a). Scutellum V-shaped and posteriorly pointed (Fig. 2k). Abdominal tergum II with a thin finger-like process. Subimago with a long vermiform process on mesonotum (Fig. 3f, g). ..... ***Caenis vermifera* n. sp.**

– Body length more than 3.5 mm. Forcipes basally broadened (Fig. 1f–n). Styliger nearly unsclerotized (Fig. 1a–e). Scutellum posteriorly rounded (Fig. 2j). Vermiform and finger-like processes lacking [subimago unknown]. .... ***Caenis elouardi***

4 Penis lobes short or absent, laterally rounded or with indistinct blunt corners (Figs. 4a–c, 5a–f). Segments II–IV of fore tarsus apically with lateral tufts of short and strong spines (Fig. 6i). **5**

– Penis lobes more or less elongated, triangular or with nearly rectangular corners (e. g. Figs. 7a–c, 8a–d). Segments II–IV of fore tarsus apically without tufts of spines..... **7**

5 Forcipes apically with a tuft of long spines (Fig. 4d). Apophyses of styliger sclerite long and parallel (Fig. 4a–c)..... ***Caenis cibaria kunda***

– Forcipes apically with one or a few short spines (Figs. 6a–h, 7j–k). Apophyses of styliger sclerite short or long and diverging anteriorly (Fig. 5a–f, MALZACHER 1990: fig. 6c)..... **6**

6 Forcipes long and bowed, apically with three short spines (Fig. 7j, k). Apophyses of styliger sclerite very long and bent laterally (MALZACHER 1990: fig. 6c)..... ***Caenis gilliesi***

– Forcipes short and more or less straight, apically with only one strong spine, sometimes a thin and very inconspicuous second one visible (Fig. 6a–h). Apophyses of styliger sclerite short or a little longer and slightly bent (Fig. 5a–f)..... ***Caenis nigricola* n. sp.**

7 Apophyses of styliger sclerite long, broad and more or less curved medially (Figs. 11a, b; 12a, b). Segments II–IV of fore tarsus fused on ventral side (Fig. 12g)..... **8**

– Apophyses of styliger sclerite short; if longer then narrow and straight (Figs. 8a–d, 10a–c). Segments II–IV of fore tarsus not fused..... **9**

8 Forcipes more or less abruptly bent medially, as long as the distance between the extreme lateral points of the forceps bases (Fig. 11a–e), about 10 times as long as apical spines (Fig. 11c–e). Dilated part of antennal flagellum slightly concave in its median part (Fig. 11f). Abdomen with lateral filaments about half as long as the segments (Fig. 11g)..... ***Caenis pallida***

– Forcipes shorter, more or less straight, reaching about two-thirds of the distance between the extreme lateral points of the forceps bases (Figs. 12a–c, 11h). Apical spines long, forcipes 4.5–5.0 times as long as apical spines (Fig. 12c). Dilated part of antennal flagellum slightly convex (Figs. 11i, 12f). Abdomen with short lateral filaments (Fig. 12e)..... ***Caenis orthostilata* n. sp.**

9 Penis with short or nearly lacking lobes, more or less rectangular, with 4–6 sclerotized cross folds ventrally (Fig. 7a–c)..... ***Caenis antelucana***

– Penis with conspicuous triangular lobes (Figs. 8a–d, 10a–c), ventrally without sclerotized folds..... **10**

10 Fore tibia as long as or shorter than fore femur..... **11**

– Fore tibia longer than fore femur..... **12**

11 Forcipes long and straight (MALZACHER 1993: fig. 9d). Penis base broadened and often a little distended, lobes long, thin and more or less pointed (MALZACHER 1993: fig. 9a–c)..... ***Caenis jinjana***

– Forcipes shorter, apical third more or less abruptly bent (Fig. 9e–i). Penis base not distended, lobes broader, apically rounded (Fig. 8a, b)..... ***Caenis jinjanoides* n. sp.**

12 Penis medially narrowed, with long, relatively slender and more or less pointed lobes, often slightly sickle-shaped (MALZACHER 1993: fig. 14a, b). Strongly coloured specimens with paratergal and parasternal blackish-brown dashes on abdominal segments VII–IX and parasternal spots on segments II–VI..... ***Caenis brevipes***

– Penis lobes shorter, broader triangular; if elongated not sickle-shaped but with concave lateral margins (Figs. 8c–d, 10a–c). Strongly coloured specimens with paratergal dashes or spots at most on segments II–VI..... **13**

13 Body shorter than 3.0 mm. Lateral margins of penis distinctly and often abruptly bent (Fig. 10a–c). Forcipes more or less straight (Fig. 10d–h). Rudiments of maxillae apically not pigmented..... ***Caenis berneri***

– Body longer than 3.5 mm. Lateral margins of penis only slightly, never abruptly bent (Fig. 8c, d). Forcipes more or less regularly curved (Fig. 9a, b). Rudiments of maxillae apically pigmented (Fig. 9d)..... ***Caenis kohli* n. sp.**

5 Discussion

The species *Caenis elouardi* and *C. vermifera* share the following characters: Posterolateral corners of segment IX reduced; penis short and broad, with rounded corners (Figs. 1a–d; 3a, b); forcipes short and apically rounded (Figs. 1f–n, 3c). *C. ghibana* from Ethiopia also has similarities with *C. vermifera*, such as a finger-like process on the second abdominal tergum, and the shape of sternum IX and genitalia. However, the forcipes of *C. ghibana*, although apically rounded as in *C. vermifera*, are more developed and form sclerotized tips somewhat set off against the forceps shaft (MALZACHER 1990: fig. 5b). Therefore *C. ghibana* can not be included in the *Caenis* species groups with rounded forceps tip. Species which have such forcipes were subdivided into five groups by MALZACHER (2001), four from South America and one, the *C. elouardi* group, from West Africa. As the genitalia of *C. vermifera* are clearly different and more advanced than in the *C. elouardi* group, the *C. vermifera* group can be established as a sixth species group. Besides the length and shape of the forcipes there is another feature for characterizing the groups with rounded forceps tip: the ratio of the distance between the extreme lateral points of the forcipes bases to the forceps length. Concerning this character, the *C. vermifera* group is close to the most plesiomorphic group from South America, the *C. reissi* group. The value of the given ratio is 2.2–2.8 in the *C. reissi* group and 2.2–2.5 in *C. vermifera*, whereas it is 3.0–4.8(!) in *C. elouardi*, and 1.0–1.7 in the vast majority of the other *Caenis* species.

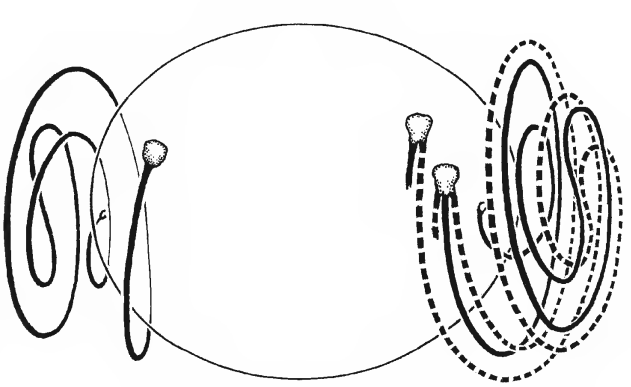
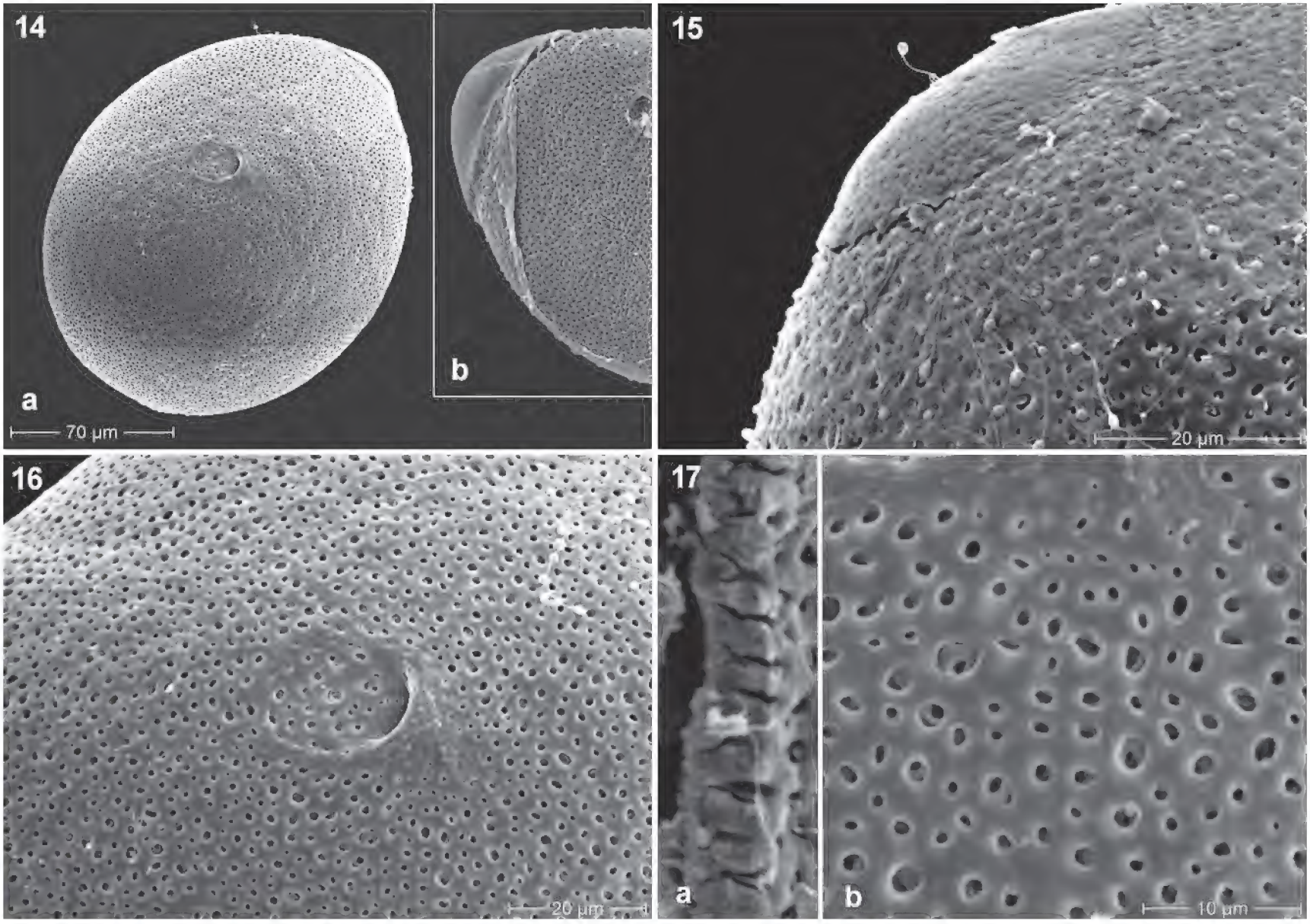
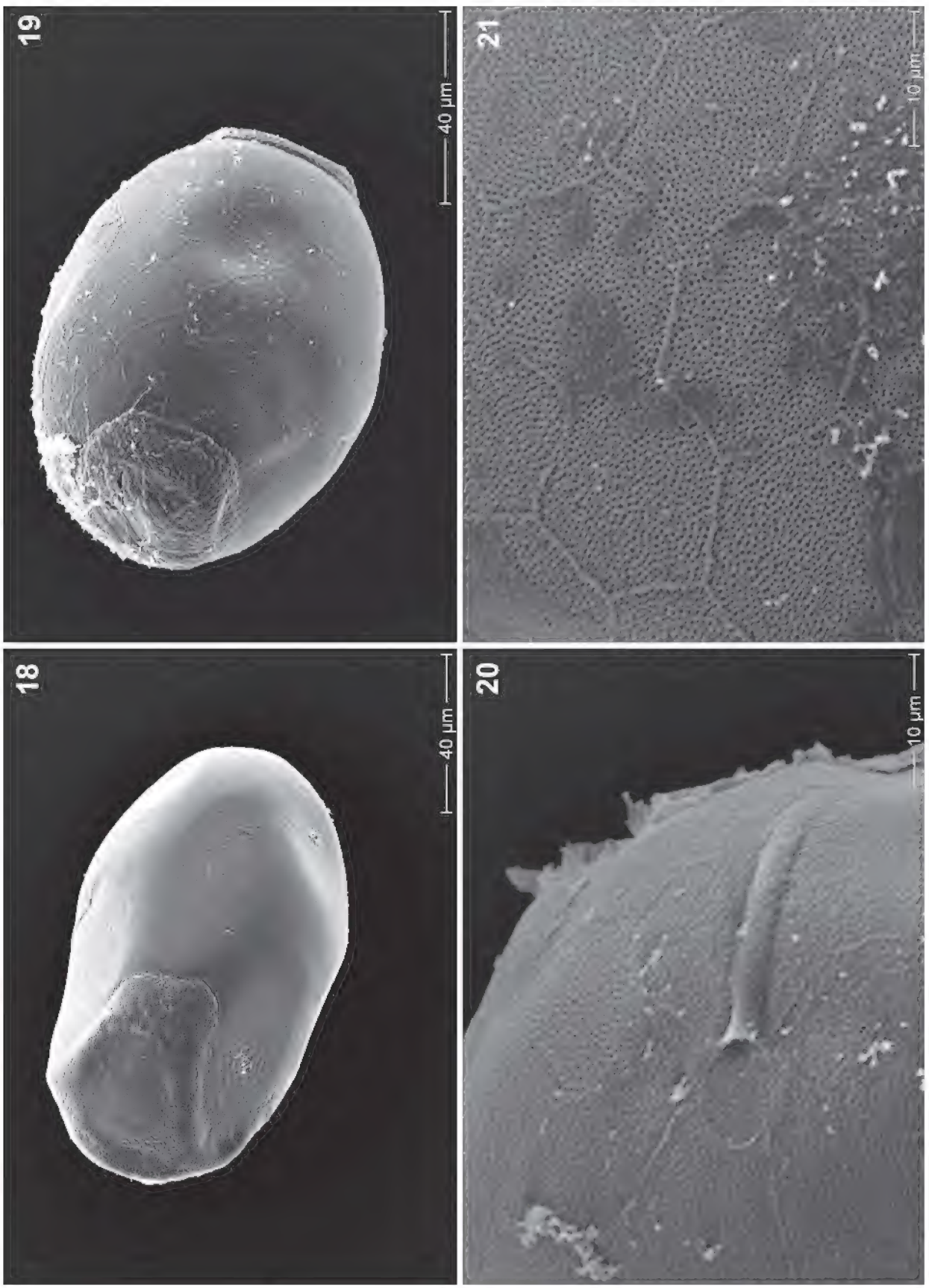


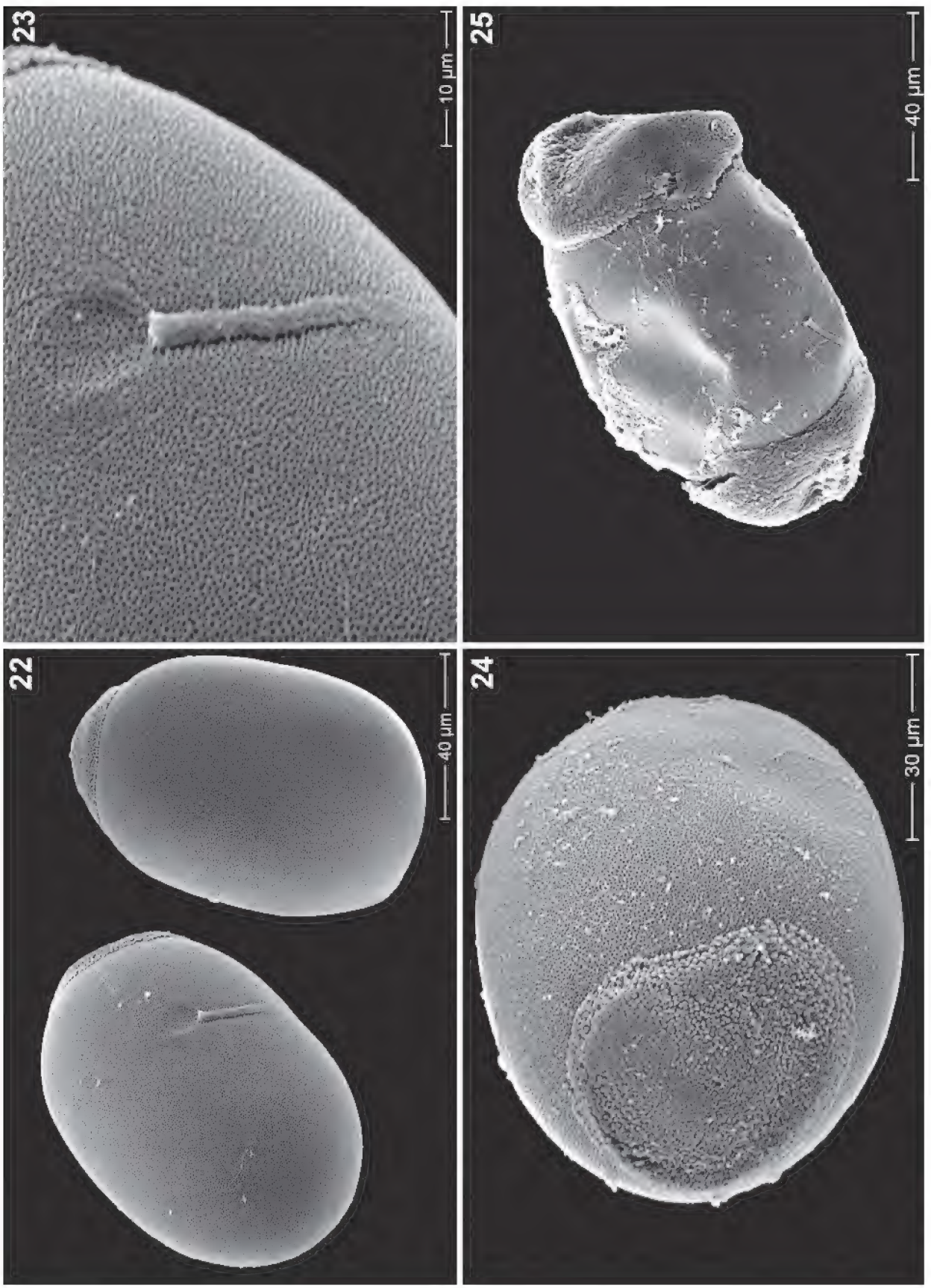
Fig. 13. Schematic view of the coiled-rope epithema-types, *C. perpusilla* subtype (left) and *C. robusta* subtype (right). – Slightly modified after MALZACHER (1982).



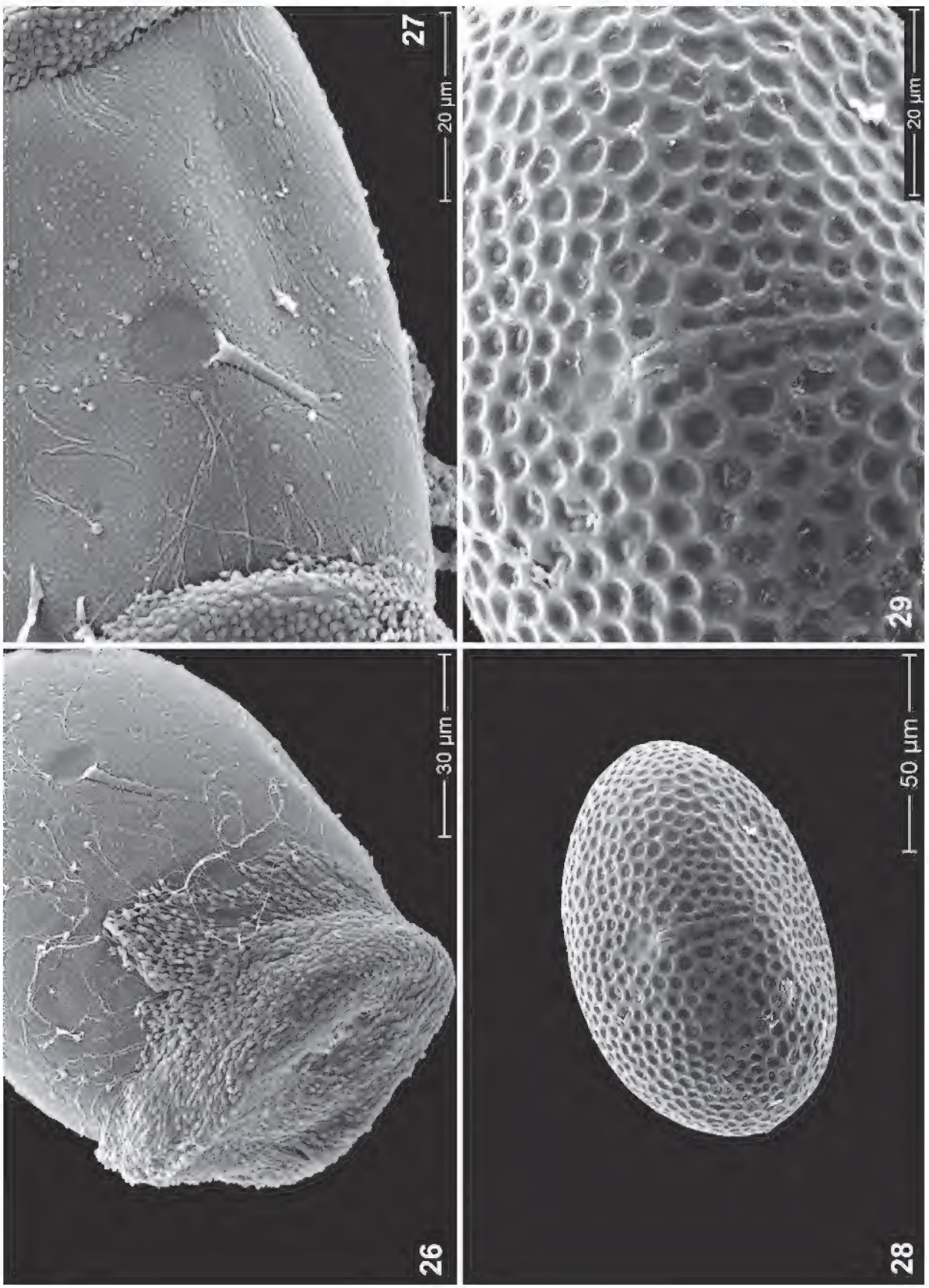
Figs. 14–17. *Caenis elouardi*, eggs. – **14**. Eggs with small (a) and large (b) epithema. **15**. Epithema with extraepithematal threads and terminal knobs. **16**. Micropyle. **17**. Surface of chorion (b), transverse section of chorion (a).



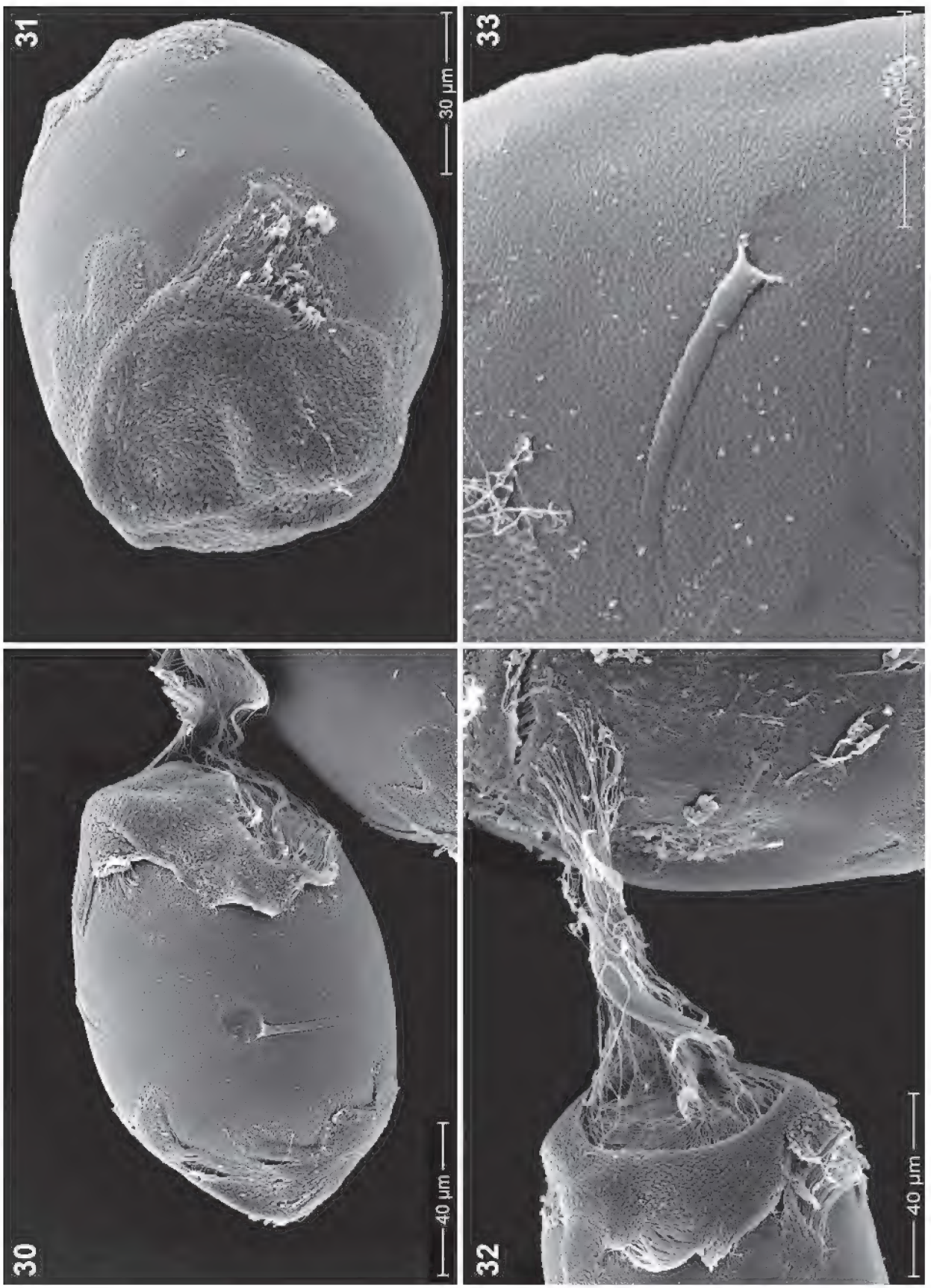
Figs. 18–21. *Caenis vermifera* n. sp. (18), *C. gilliesi* (19–21), eggs. – **18**, **19**. Eggs. **20**. Micropyle. **21**. Surface of chorion.



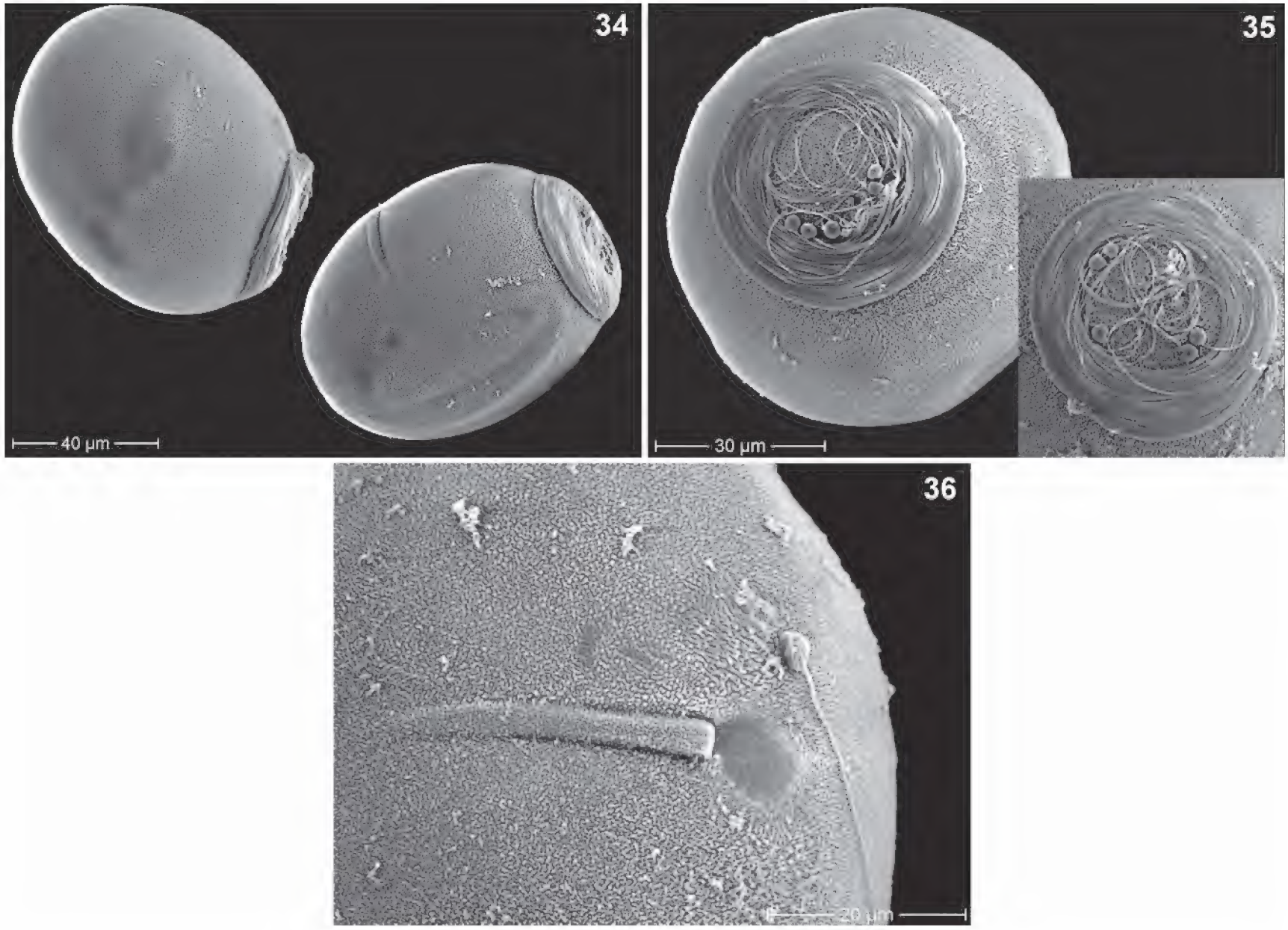
Figs. 22–25. *Caenis nigricola* n. sp. (22–24), *C. jinjana* (25), eggs. – **22**, **25**. Eggs. **23**. Micropyle. **24**. Epithema.



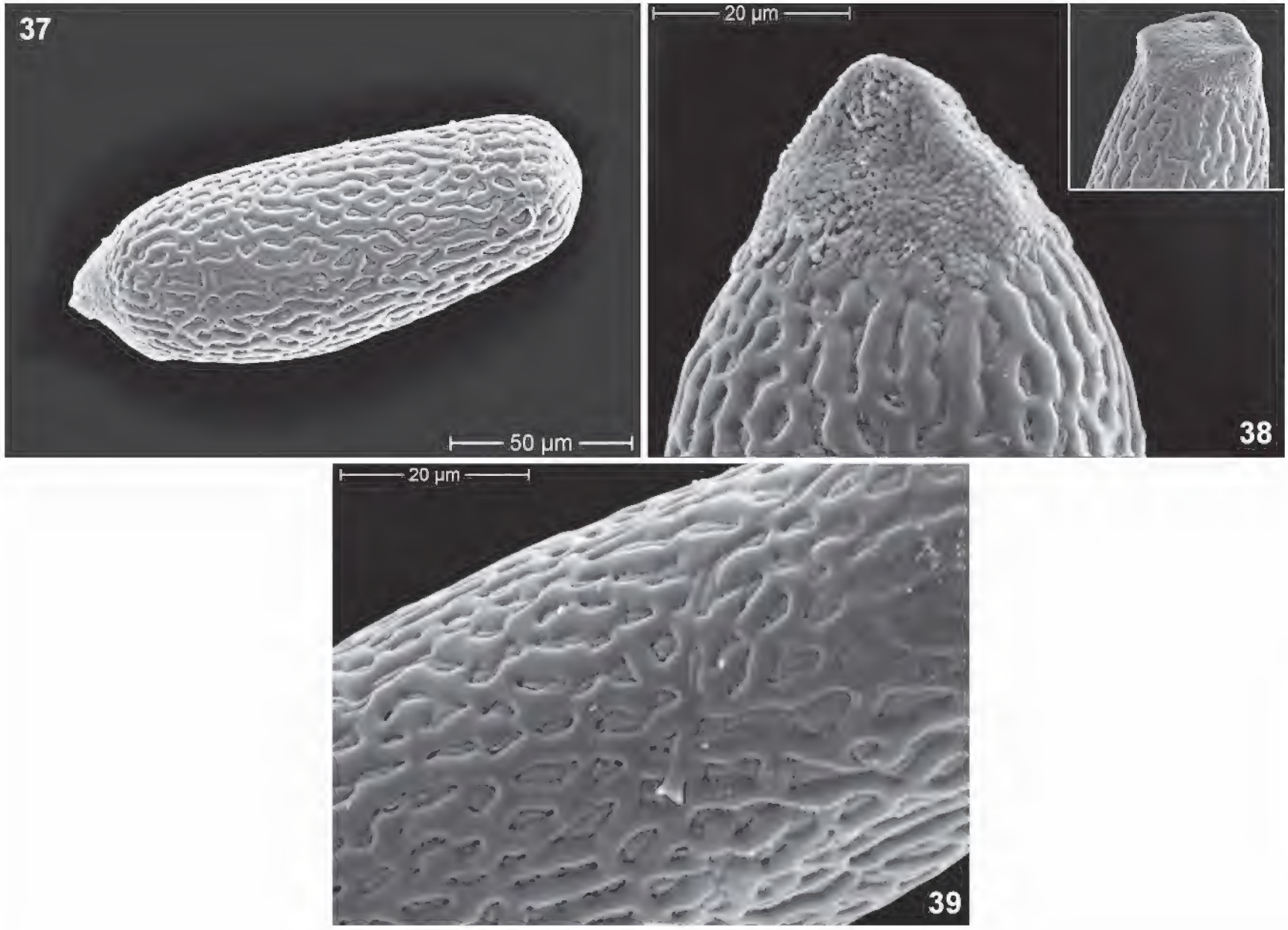
Figs. 26–29. *Caenis jinjana* (26, 27), *C. jinjanoides* n. sp. (28, 29), eggs. – **26**. Epithema. **27**. Micropyle. **28**. Egg. **29**. Micropyle and surface of chorion.



Figs. 30–33. *Caenis brevipes*, eggs. – **30**. Egg. **31**. Epithema. **32**. Epithema-threads uncoiled and attached to the surface of another egg. **33**. Micropyle.



Figs. 34–36. *Caenis kohli* n. sp., eggs. – **34**. Eggs. **35**. Epithemata. **36**. Micropyle and surface of chorion.



Figs. 37–39. Caeninae gen. sp., eggs. – **37**. Egg. **38**. Epithemata, different shapes. **39**. Micropyle and surface of chorion.

After the splitting of Gondwana, these plesiomorphic forms developed in separate lineages, evolving to more differentiated genitalia of the *C. pflugfelderi* group and the *C. argentina* group in South America and the *C. ghibana* group in Africa, later on leading to other apomorphic *Caenis* genitalia in both continents.

The *Caenis cibaria* group was established by MALZACHER (1993), uniting species with apico-lateral tufts of stronger spines on segments II–IV of the fore tarsus (MALZACHER 1990: fig. 6a, i; MALZACHER 1993: fig. 6c), in combination with short or very short more or less rounded penis lobes, a V-shaped sclerite on the ventral side of the penis (Figs. 4a–c, 5a–e), and preapical spots on the femora. Besides *C. cibaria* and *C. gilliesi*, the here described *C. nigricola* also belongs to this group. The apical forceps spines are very long in *C. cibaria* (Fig. 4d), but shortened in the other species (Figs. 6a–f, 7j–k). In *C. gilliesi* there are three short spines and in *C. nigricola* only one (sometimes with another very thin and inconspicuous one, Fig. 6g–h). In the latter species the forcipes are short and broad and more or less straight, in contrast to the bent and longer ones in *C. cibaria* and *C. gilliesi*.

The other species covered in the present paper are characterized by triangular, more or less elongated and pointed penis lobes (Figs. 7a–c; 8a–d; 10a–c; 11a, b; 12a, b), in connection with forcipes with apical tufts of spines (Figs. 7d–g; 9a, b, e–i; 10d–h; 11c–e; 12c). They belong to three different species groups (MALZACHER 1993):

The *C. jinjana* group, consisting of *C. jinjana* and *C. antelucana*, has been characterized until now by short fore legs (about as long as hind legs) and by tibiae about as long as femora. Also the newly described *C. jinjanoides* shows these features, but concerning penis and forceps shape it seems to be closer to the *C. brevipes* group. Hence, its assignment remains uncertain, mainly because short fore legs and fore tibiae cannot be regarded as synapomorphies of the genus *Caenis*. These characters are present also in some populations of *C. brevipes* from Gambia (described as subspecies *C. brevipes occidentalis* by MALZACHER 1993). On the other hand, long and very long fore legs and tibiae can be observed in a population of *C. antelucana* (Guinea, Nzebela). Finally, the new extensive material of *C. brevipes* shows fluid transitional stages of these features. *C. brevipes occidentalis*, which was characterized mainly by the short fore legs, can therefore no longer be maintained as a valid subspecies.

Another species of the *C. brevipes* group is *C. berneri*, hitherto known from Tanzania and Kenya. As shown in the description in the present paper, most of the West African specimens are differing in a few characters from those of East Africa. In view of the above mentioned variability and existence of transitional stages, the description of a new subspecies of *C. berneri* on the base of morphological characters would not be tenable. The same is true for populations of *C. cibaria kunda* from the Fouta Djalon region and *C. nigricola* fom Central and West Guinea, although, particularly in the latter, a geographical separation is obvious.

The morphological characters of the newly described species *C. kohli* are very similar to that of *C. brevipes*. Therefore it is surprising that the eggs possess a totally different epithema-type which I call the coiled-rope-type. It is characterized by the presence of a number of threads that are rolled up like ropes on the deck of a ship (Fig. 35).

C. orthostilata seems to be closely related to *C. pallida*, and will therefore be assigned to the *C. pallida* group. Common characters are the more or less fused segments II–IV of the fore tarsus (MALZACHER 1990: figs. 10d, 12g) and the sickle-shaped styliger sclerite with long and bent apophyses (Figs. 11a, b; 12a, b). Distinctive characters are the different shape and length of the forcipes (Fig. 11c–e, h), slightly differing proportions of the genitalia and the length of the lateral filaments on the abdomen (Figs. 11g, 12e). *C. corbeti* from Uganda, which was formerly assigned to the *C. pallida* group only based on the shape of the forcipes (MALZACHER 1993), however, neither has a sickle-shaped styliger sclerite nor long and bent apophyses. Segments II–IV of the fore tarsus are not fused. Therefore a separate species group is established for this species, the *C. corbeti* group.

The eggs of most of the West African species show specific characters. The epithemata of *Caenis kohli* seem to be most spectacular. This epithema-type is, however, not unique in the Caeninae because it can also be found in *C. perpusilla* from India (SMITH 1935, MALZACHER 1982), in the Palaearctic *C. robusta* (DEGRANGE 1957, MALZACHER 1982), in the South American *C. fitkaui* and *C. cuniana*, and in the species of *Brasilocaenis* (MALZACHER 1986: tab. 2, fig. 5). This type shows two subtypes: The *C. perpusilla* subtype (Fig. 13, left) consists of only a few threads (4–6) and the same number of large terminal knobs. Each thread is joined with the pole of the egg. In their middle part the threads are forming loops so that their running direction is reversed (Fig. 35). In the more complex *C. robusta* subtype (Fig. 13, right) a greater number of terminal knobs can be observed (from about 10 up to nearly 50). From each knob several (2–7) threads are leading off (MALZACHER 1986: tab. 2, fig. 6). All threads are forming loops, but only a small number is anchored on the egg surface. Each of the other ones joins two different terminal knobs which can be observed in uncoiled epithemata (Fig. 13, right). This subtype is realized in *C. robusta* and in the South American species, the other one in *C. perpusilla* and *C. kohli*. It is a peculiarity of *C. kohli* that its eggs have only one epithema. In all other species mentioned in this paragraph, the eggs show two epithemata.

The number of epithemata is also different in two closely related species of the *C. cibaria* group: *C. gilliesi* shows two epithemata, *C. nigricola* only one.

In two of the newly described species the chorion structure of the eggs differs strongly from the structure that can be found in the majority of the other Caeninae species. This applies to the eggs of *C. jinjanoides* which show small fields deeply sunken in (Figs. 28, 29), and the very elongated eggs of an unidentified species (gen. sp.) with irregular fields and broad elevated bands (Figs. 37–39). The latter belongs to the subfamily Caeninae because of the presence of prosternal ridges forming a trapezoid. The eggs of the unidentified species possess one epithema; epithemata are totally lacking in *C. jinjanoides*. As in the case *C. kohli*/*C. brevipes*, also in *C. jinjanoides* the egg structure is very different from that of the very similar *C. jinjana*.

In view of the rather random distribution of the features discussed herein, once again the question arises how the phylogenetic state of a certain character can be assessed in lower taxa. In the case of the highly differentiated coiled-rope epithemata, the sporadic appearance all over the world seems to be coincidental. A closer relationship between species with this epithema-type from different continents is not likely. In my opinion, this character distribution is best explained as parallelism (sensu Herre 1961 and Sturm 1994). This could be caused by temporarily suppressed gene effects produced e. g. by specific transcription mechanisms (Malzacher 1997). Then the phenotypical appearance of the character may depend on selection pressure. In case of the coiled-rope epithemata this could be a low concentration of oxygen at the bottom of lentic water areas. Uncoiled and tangled threads (in *Caenis robusta* already realized in unlaid eggs in the oviduct) lead to large egg conglomerations that later become more easily attached to plants. So the eggs can develop in an area of higher oxygen concentration.

6 References

Degrange, C. (1957): Note de synonymie: *Caenis incus* Bengtsson, 1919 = *Caenis robusta* Eaton, 1884 (Ephemeroptera). – Travaux du Laboratoire d'Hydrobiologie et de Pisciculture de l'Université de Grenoble **48/49**: 33–36.

Demoulin, G. (1970): Ephemeroptera des faunes éthiopienne et malgache. – South African Animal Life **14**: 24–170.

Gattolliat, J.-L. & Sartori, M. (2006): The mayflies of Ghana (Insecta: Ephemeroptera). – Annales Historico-Naturales Musei Nationalis Hungarici **98**: 5–28.

Herre, W. (1961): Zur Problematik der Parallelbildungen bei Tieren. – Zoologischer Anzeiger **166**: 309–333.

Kimmins, D. E. (1956): New species of Ephemeroptera from Uganda. – Bulletin of the British Museum of natural History (Entomology) **4**: 71–87.

Le Berre, R., Walsh, J. F., Philippon, B., Poudiougo, P., Henderickx, J. E. E., Guillet, P., Sékétéli, A., Quillévéré, D., Grunewald, J. & Cheke, R. A. (1990): The WHO Onchocerciasis Control Programme: retrospect and prospects. – Philosophical transactions of the royal Society of London, Series B (Biological Sciences) **328**: 721–729.

Malzacher, P. (1982): Eistrukturen europäischer Caenidae (Insecta, Ephemeroptera). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **356**: 15 pp.

Malzacher, P. (1986): Caenidae aus dem Amazonasgebiet (Insecta, Ephemeroptera). – Spixiana **9**: 83–103.

Malzacher, P. (1990): Caenidae der äthiopischen Region (Insecta: Ephemeroptera). Teil 1. Beschreibung neuer Arten. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **454**: 28 pp.

Malzacher, P. (1993): Caenidae der äthiopischen Region (Insecta: Ephemeroptera). Teil 2. Systematische Zusammenstellung aller bisher bekannten Arten. – Mitteilungen der schweizerischen entomologischen Gesellschaft **66**: 379–416.

Malzacher, P. (1997): Relationships in the Caenidae (Insecta: Ephemeroptera). – In: Landolt, P. & Sartori, M. (eds.): Ephemeroptera & Plecoptera: Biology – Ecology – Systematics, pp. 550–553; Fribourg (Mauron, Tinguely & Lachat).

Malzacher, P. (2001): South and Central American *Caenis* species with rounded forceps tips (Insecta: Ephemeroptera: Caenidae). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **626**: 20 pp.

Malzacher; P. (2009): Two new genera of Caenidae (Insecta: Ephemeroptera) from Guinea, West Africa. – Aquatic Insects **31**: 279–292.

Malzacher, P. & Staniczek, A. H. (2006): Revision of the Madecocercinae (Ephemeroptera: Caenidae). – Aquatic Insects **28**: 165–193.

Smith, O. R. (1935): The eggs and egg-laying habits of North American mayflies. – In: Needham, J. G., Traver, J. R. & Hsu, Y.-C. (eds.): The biology of mayflies, pp. 67–89; Ithaka, N. Y. (Comstock Publishing Company).

Soldán, T. (1983): Two new species of *Clypeocaenis* (Ephemeroptera: Caenidae) with a description of adult stage and biology of the genus. – Acta entomologica bohemoslovaca **80**: 196–205.

Sturm, H. (1994): Diskontinuierlich active Gene und Evolution. Eine Diskussion am Beispiel der Archaeognatha (Insecta). – Journal of zoological Systematics and evolutionary Research **32**: 241–263.

Thew, T. B. (1960): Revision of the genera of the family Caenidae (Ephemeroptera). – Transactions of the American entomological Society **76**: 187–205.

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New larvae of Baetidae (Insecta: Ephemeroptera) from Espiritu Santo, Vanuatu

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Abstract

During the Global Biodiversity Survey "Santo 2006" conducted in Espiritu Santo, Vanuatu, mayfly larvae were collected in several streams of the island. This contribution deals with the larvae of Baetidae (Insecta: Ephemeroptera) that are represented by two species: *Labiobaetis paradisus* **n. sp.** and *Cloeon* sp. The presence of these two genera is not surprising as they both possess almost a worldwide distribution and constitute a great part of Australasian Baetidae diversity. Diagnoses of these two species are provided and their affinities are discussed.

Keywords: Australasia, *Cloeon erromangense*, *Labiobaetis paradisus*, mayflies, new species, Santo 2006, taxonomy.

Zusammenfassung

Im Rahmen der auf Espiritu Santo, Vanuatu, durchgeführten Biodiversitätserfassung "Santo 2006" wurden Eintagsfliegenlarven in verschiedenen Fließgewässern der Insel gesammelt. Der vorliegende Beitrag behandelt die Larven der Baetidae (Insecta: Ephemeroptera), die mit zwei Arten vertreten sind: *Labiobaetis paradisus* **n. sp.** and *Cloeon* sp. Der Nachweis beider Gattungen ist nicht überraschend, da diese eine nahezu weltweite Verbreitung besitzen und einen großen Anteil der Diversität australasiatischer Baetidae ausmachen. Die beiden Arten werden beschrieben, beziehungsweise eine Diagnose gegeben, und Unterschiede zu anderen Formen werden diskutiert.

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1 Introduction

At present, 40 species within 12 genera of Baetidae are described from the Australasian realm, with 19 species recorded from Australia and 17 species from New Guinea (Gattolliat & Nieto 2009, Webb & Suter 2010). Other reports of Baetidae are from the Fiji islands where 12 species belonging to three different genera were recorded (Flowers 1990). These species remained undescribed and their generic attribution provisional. Three species were placed in the "*Baetis molawinensis* group", which corresponds to the present generic concept of *Labiobaetis/Pseudocloeon* (for a detailed discussion see Fujitani et al. 2005 and Gattolliat et al. 2008). Baetidae were considered as absent from New Zealand and New Caledonia. However, larvae of *Cloeon* were collected in recent samplings in standing waters of New Caledonia (N. Mary-Sasal, unpublished data); the process of colonisation of the island remains unclear and could be related to human activities.

From Vanuatu, so far only a single species of Baetidae, *Cloeon erromangense* Kimmins, 1936 was described. Kimmins (1936) reported this species from the island Erromango. Vanuatu, formerly known as New Hebrides, is composed of 83 islands that are mainly of volcanic origin. The archipelago is situated in the south-western Pacific Ocean, located about 1750 km east of Australia and New Guinea, and 500 km north-east of New Caledonia. The present land surface of Vanuatu originated from late Pliocene-Pleistocene volcanism and from the growth of Pleistocene coral reef platforms combined with uplifting, less than 2 million years ago (Mueller-Dombois & Fosberg 1998). This geologically rather young age together with a remote and isolated geographical position accounts for its comparatively poor mayfly fauna.

During the scientific expedition "Santo 2006" (for a narrative of this expedition see Bouchet et al. 2008), new material of Ephemeroptera was collected on Espiritu Santo by one of us (AHS) in November 2006. From this material, *Caenis vanuatensis* Malzacher, 2007 (Caenidae) was already described (Malzacher & Staniczek 2007). Among the larval material collected during this field trip were also two species of Baetidae, namely one species of *Cloeon* and one new species of *Labiobaetis*. Both of these species are dealt with in this contribution.

Acknowledgements

This study is a result of the "Santo 2006" expedition to the island of Espiritu Santo, Vanuatu, under the auspices of Muséum national d'Histoire naturelle, Institut de recherche pour le développement (IRD, France), and Pro-Natura International. The participation of Arnold H. Staniczek and Milan Pallmann (both SMNS) in the expedition was financially supported and carried out in the framework of Work Package 7 of the European Distributed Institute of Taxonomy (EDIT). Many thanks are due to Christoph H. Häuser (Museum für Naturkunde Berlin) for making this possible. We also thank Milan Pallmann (SMNS) for his help in collecting, taking photographs and SEM pictures. Helen James (Albany Museum Grahamstown, South Africa) and Jeff Webb (La Trobe University, La Trobe, Australia) improved this paper by their helpful and constructive peer reviews.

2 Materials and methods

All material was collected in November 2006 during the scientific expedition "Santo 2006" that was conducted to sample and identify the fauna and flora of Espiritu Santo. The larvae were collected mainly by kick-sampling and sweeping of riparian vegetation in the lower reaches of several streams close to the shore. All material was stored in 80 % EtOH.

Photograph series with different focal depths were made from larvae using a Leica DFC320 digital camera on a Leica Z16 APO Macroscope and subsequently processed with Leica LAS software to obtain photographs with extended depth of field. The combined photographs were then digitally enhanced using Adobe Photoshop CS3.

Specimens used for SEM were dissected and dehydrated through a stepwise immersion in ethanol and then dried by critical point drying. The mounted material was coated with a 20 nm Au/Pd layer, examined with a ISI-SS40 scanning electron microscope at 10 kV. Digital photographs were directly acquired by using DISS 5 software (point electronic) and subsequently processed with Adobe Photoshop CS3.

Holotype and a part of the paratypes of *Labiobaetis paradisus* n. sp. are housed in the Staatliches Museum für Naturkunde, Stuttgart, Germany (SMNS), remaining paratypes are stored in the Museum of Zoology, Lausanne, Switzerland (MZL) and the Muséum national d'Histoire naturelle, Paris, France (MNHN).

3 Results and Discussion

3.1 *Labiobaetis paradisus* n. sp.
(Figs. 1–17)

Holotype, ♀ larva: Vanuatu, Espiritu Santo, Tasmate, Paé River S 15.21751° E 166.63316°, 140 m, 11.IX.2006, leg. A. H. Staniczek (SMNS).

Paratypes: 46 ♀ larvae, same data as holotype (SMNS, MZL, MNHN).

Etymology

The species epithet is derived from the Latin "paradisus" and used as a noun in apposition. It refers to the pristine native forest of Espiritu Santo that reminded us of an earthly paradise.

Description of larva

Length, fully grown female: Body 3.6–4.2 mm, cerci 3.5 mm, terminal filament 1.9 mm.

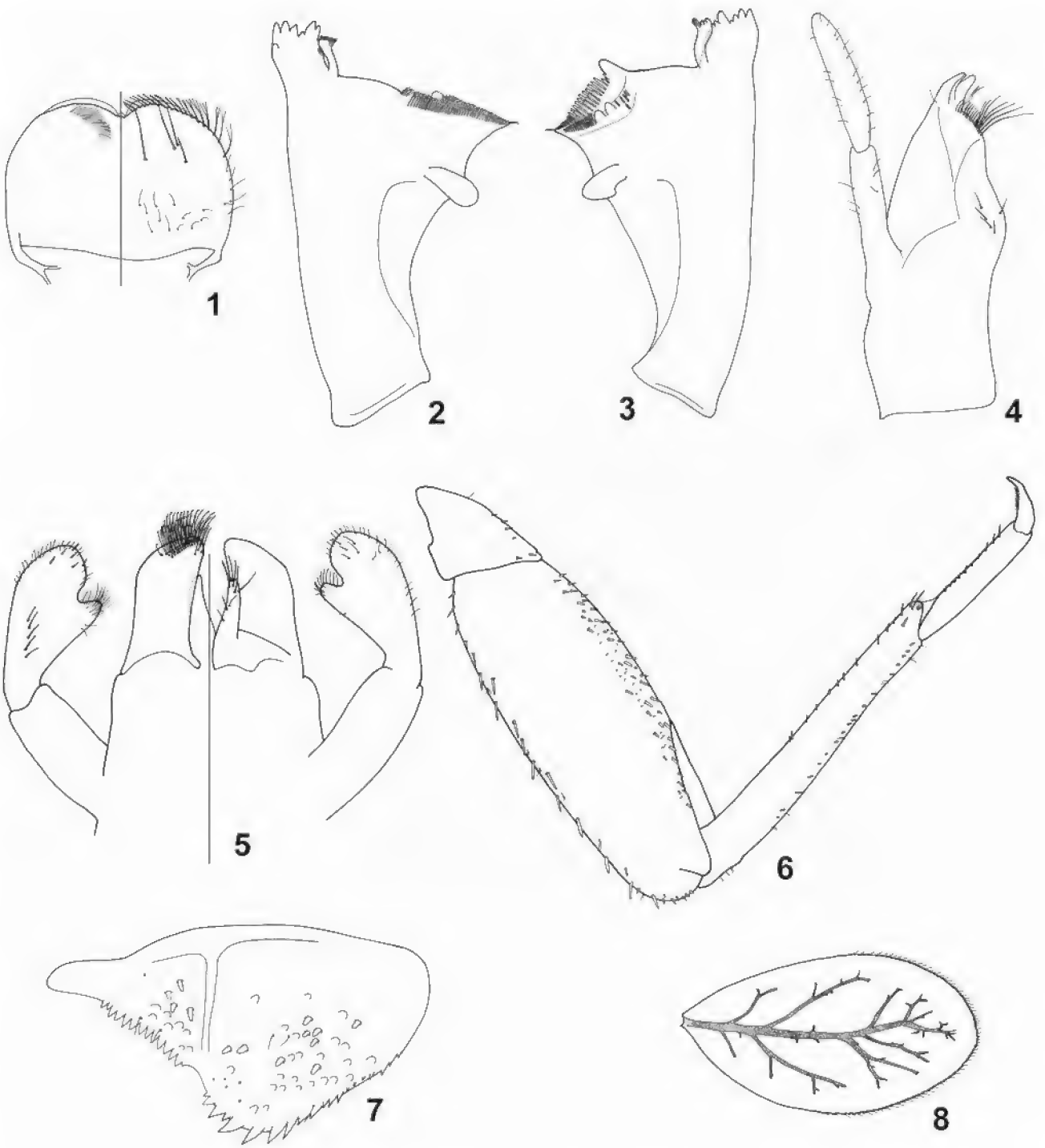
Colouration (Figs. 15–17): Head almost uniformly medium brown, with darker, vermiform marking on vertex and frons, border of sclerites yellow. Thorax medium brown with poorly marked yellowish pattern. Abdominal tergites uniformly medium brown, except tergite IX light brown. Abdominal sternites yellowish brown. Cerci yellow without dark stripe.

Head: Pedicel of antenna without distolateral process (Fig. 17). Labrum (Fig. 1) rounded, with an anteromedial emargination, dorsally with one submedian, long, simple seta, and laterally to it another two long, simple setae and one medium-sized, simple seta. Short, thin, simple setae scattered on proximal half of labrum; distal margin bordered with feathered setae. Canine of right mandible (Fig. 2) with two partially fused incisivi each with 4 denticles; inner margin of inner incisivus with a row of very thin setae; stout prostheca apically with small rounded denticles; margin between prostheca and mola smooth, without setae; tuft of setae at apex of mola reduced to two small setae. Left mandible (Fig. 3) with two partially fused incisivi, outer incisivus with 4 denticles, inner incisivus with 3 denticles; stout prostheca apically with small denticles and a comb-shaped structure; margin between prostheca and mola distally crenulate; tuft of setae at apex of mola reduced to two setae. Maxilla (Figs. 4, 10) with a medioapical row of relatively short setae, basal end of row with seven long setae; posterior side of lacinia mediobasally with a row of 4 medium-sized setae, medially to this row a single small seta is present close to the medial margin of lacinia; palp 2-segmented, segment II without distomedial concavity. Hypopharynx (Fig. 11): Posterior side of lingua with median projection, covered with dark, stout setae. Labium (Fig. 5) with glossae clearly shorter than paraglossae; glossae slender in apical half and basally broad, with only a few setae laterally and apically; paraglossae stout, apically flattened, with 3–4 rows of stout setae. Labial palp 3-segmented, segment I slender, subequal to segments II and III combined; segment II with a small, thumb-like distomedial projection covered with numerous thin setae, on posterior side with a row of five long setae; segment III subconical, with scattered short thin setae and a few stouter setae.

Thorax: Hind wing pads absent (Fig. 9). Trochanter of foreleg (Fig. 6) with a few short, stout setae. Forefemur dorsally with a row of medium-sized, apically rounded setae; apex with short setae; ventral margin with abundant, short, stout setae, villopore absent. Foretibia dorsally with a row of tiny, stout setae; ventrally with a few short setae, longer and more abundant apically, tibiopatellar suture present. Foretarsus almost bare dorsally; ventral margin with a row of pointed setae increasing in length toward

the apex; tarsal claw (Fig. 14) with a single row of about 12 teeth; subapical setae absent. Middle and hind legs similar to foreleg but with reduced setation.

Abdomen: Tergites slightly shagreened, with setae, numerous scales and scale bases (Fig. 13); posterior margin with triangular spination (Fig. 12). Sterna with scales and

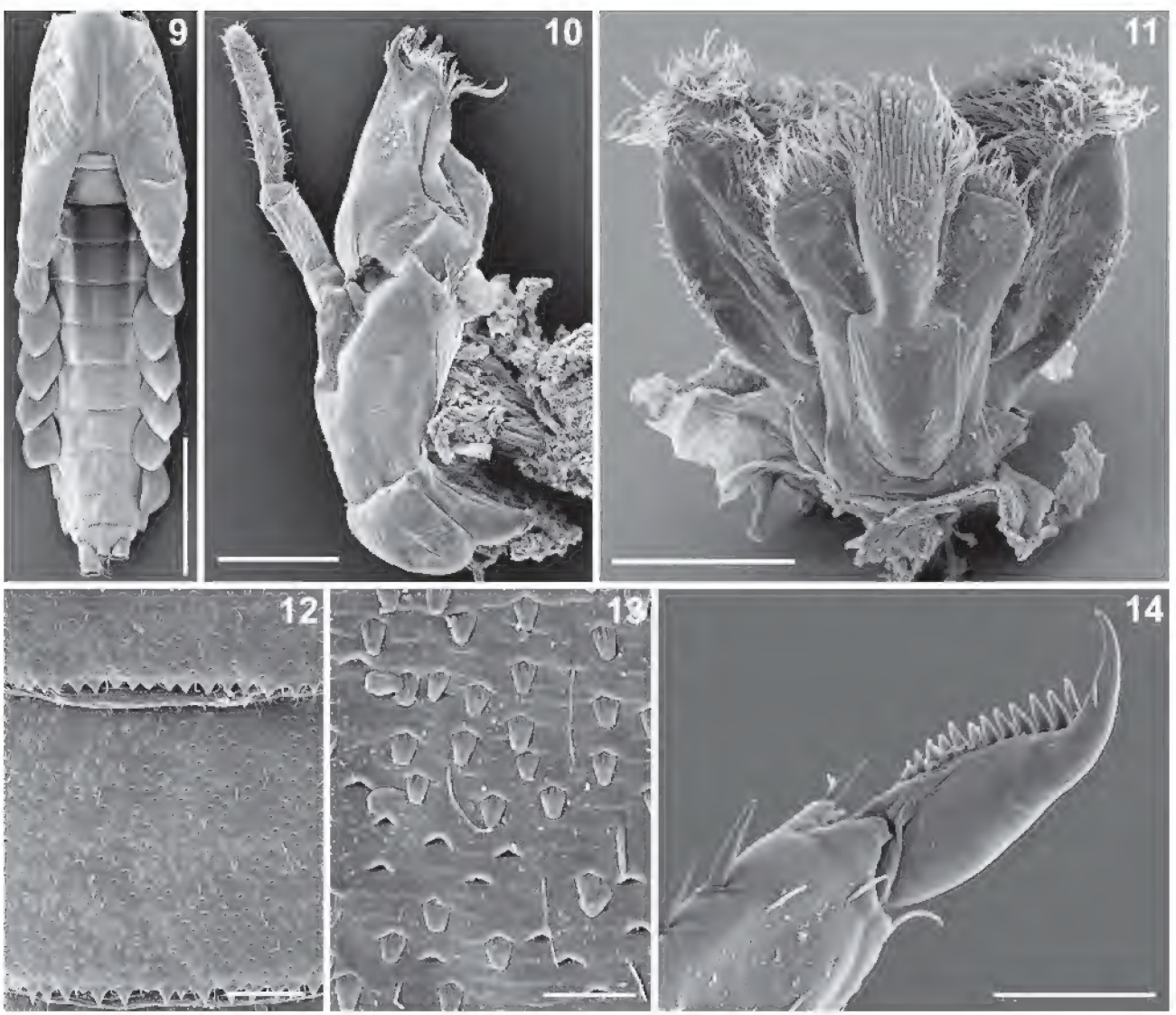


Figs. 1–8. *Labiobaetis paradisus* n. sp., larva. – **1**. Labrum (left half: posterior view; right half: anterior view). **2**. Right mandible (posterior view). **3**. Left mandible (posterior view). **4**. Right maxilla (posterior view). **5**. Prementum of labium (left half: posterior view; right half: anterior view). **6**. Right foreleg (anterior view). **7**. Paraproct. **8**. Gill IV.

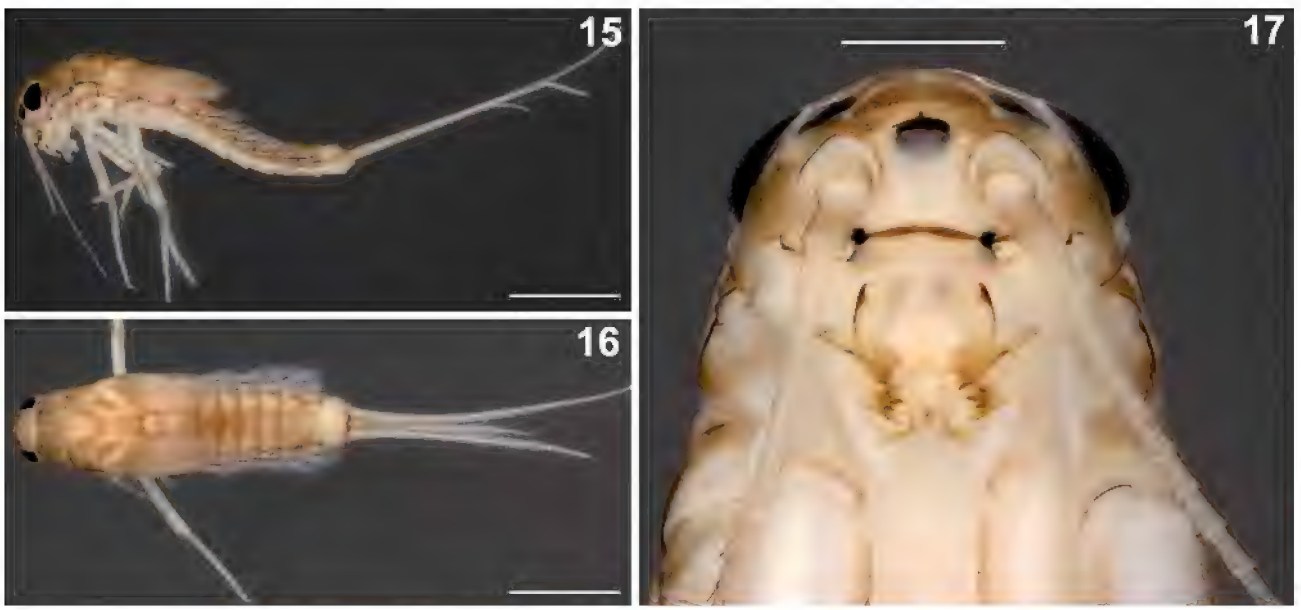
scale bases; posterior margin smooth, without spines. Gills present on abdominal segments II–VII (Fig. 9), distally serrated, tracheation dark brown, well-developed (Fig. 8). Paraproct with scale bases and scales, margin with 7–10 stout, pointed spines and a few short, pointed spines laterally; posterolateral extension with scales and scale bases, 12–14 stout, pointed spines along the margin (Fig. 7).

Differential diagnosis

Labiobaetis paradisus n. sp. has a very reduced number of simple long setae on the dorsal face of labrum, a small thumb-like distolateral projection on segment 2 of the labial palp, a reduced setation of the dorsal margin of femora, and a tuft of thin setae at the base of the right mandibular incisors. This combination of characters allows the identification of *Labiobaetis paradisus* n. sp. and its distinction from other related species. As in all Australasian species of *Labiobaetis*, hind wings and gills I are absent in *L. paradisus* n. sp., and the dorsal face of the labrum presents only simple long setae apicolaterally. *Labiobaetis paradisus* n. sp. presents a maxillary palp without excavation and strong dark setae at the apex of the median



Figs. 9–14. *Labiobaetis paradisus* n. sp., larva – **9**. Thorax and abdomen (dorsal view). **10**. Right maxilla (posterior view). **11**. Hypopharynx (posterior view). **12**. Tergite IV. **13**. Scales, scale bases and setae on tergite IV. **14**. Tarsal claw of left foreleg. – Scale lines: 100 µm (10), 80 µm (9, 11), 60 µm (12), 40 µm (14), 20 µm (13).



Figs. 15–17. *Labiobaetis paradisus* n. sp., larva – **15**. In toto (lateral view). **16**. In toto (dorsal view). **17**. Head (ventral view). – Scale lines: 2 mm (15, 16), 0.5 mm (17).

projection of the lingua; these characters are also present in most of the Australasian species. This species is morphologically rather similar to the Australian species *Pseudocloeon hypodelum* Lugo-Ortiz & McCafferty, 1999, but differs notably by the spination of the paraproct (fig. 18 in Lugo-Ortiz et al. 1999) and the shape of the right and left mandibular incisivi (figs. 11 and 12 in Lugo-Ortiz et al. 1999). *Labiobaetis paradisus* n. sp. also shares similarities especially in the mouthparts and legs with *Pseudocloeon multum* (Müller-Liebenau, 1984), but *P. multum* has an antennal process and maxillary palp segment 2 with an excavation (Müller-Liebenau 1984).

Discussion

Labiobaetis (= *Pseudocloeon* sensu Lugo-Ortiz et al. 1999) is widespread and very diversified in the Australasian and Oriental realms with 10 and 13 described species, respectively (Lugo-Ortiz et al. 1999). *Labiobaetis* is present in Australia (3 species) and New Guinea (6 species); the closest report is from Fiji with three undescribed species. The presence of this genus in Vanuatu is therefore not surprising.

The larvae of *L. paradisus* were mostly collected from overhanging riparian vegetation in the lower reaches of Paé River. At the time of collecting it was a small creek with low water current and measured water temperatures of up to 28 °C. The fact that all collected specimens are of female sex points to the possibility that this species could have a parthenogenetic mode of reproduction.

3.2 *Cloeon* sp.
(Figs. 18–23)

Material examined

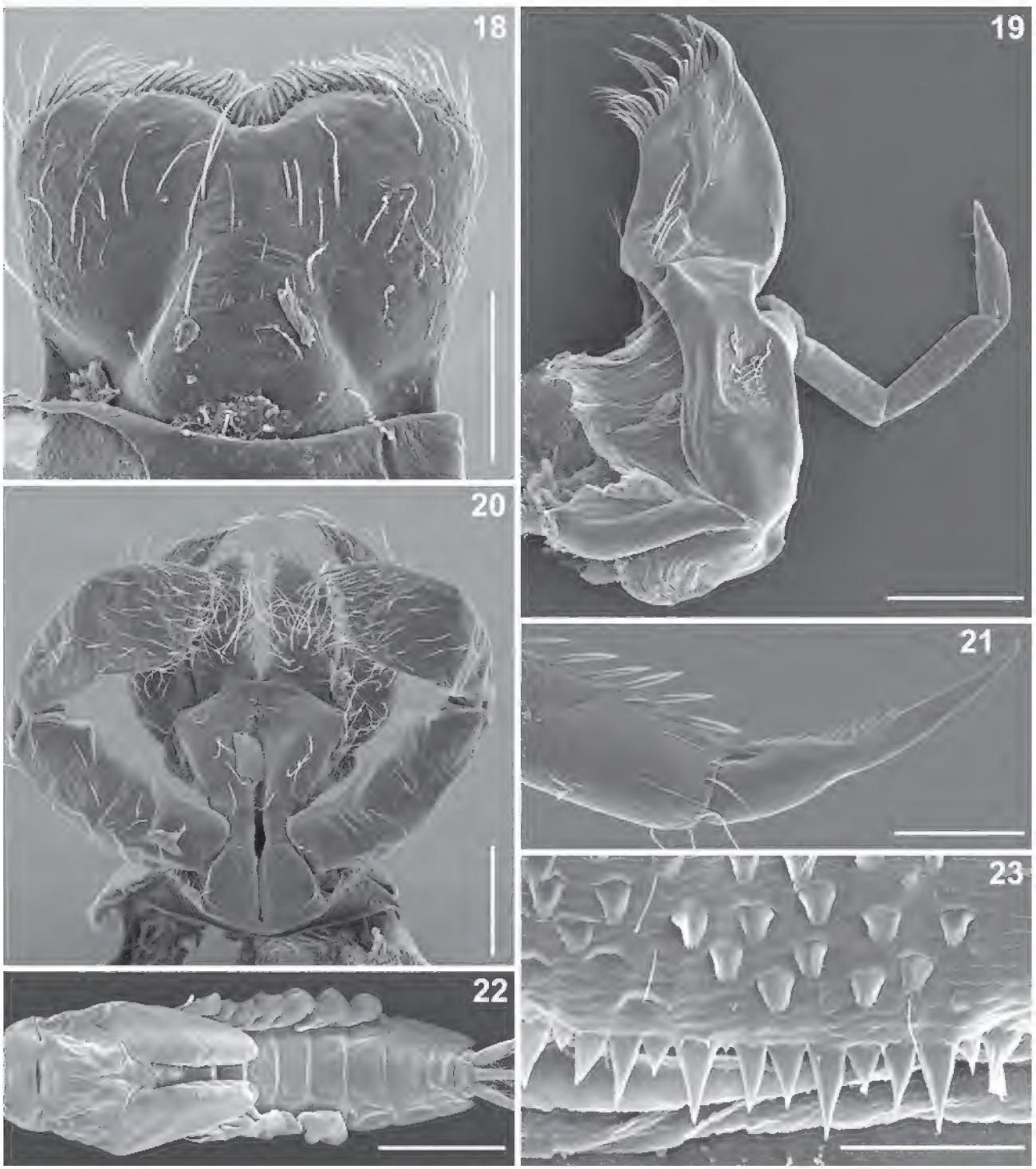
Tasmate, Paé River S 15.21751° E 166.63316°, 140 m, 11.XI.2006, 1 larva, leg. A. H. Staniczek (SMNS). – Tasmate, Mamasa River, S 15.21343° E 166.67004°, 39 m, 9.XI.2006, 2 larvae, 1 larval exuvia and 1 female subimago (reared), leg. A. H. Staniczek (SMNS).

Diagnosis

Labrum (Fig. 18) quadrangular with scattered setae on dorsal face; margin with bifid setae apicolaterally and stout simple setae medially; maxillary palp 3-segmented (Fig. 19); labial palp with segment III clavate (Fig. 20). Tarsal claw elongated (Fig. 21), two ventral rows of teeth only present in the proximal of half of claw, proximal teeth tiny, distal teeth long and slender. Tergites shagreened with numerous scales and scale bases, distal margin with long triangular pointed spines (Fig. 23). Gills present on segment I–VII (Fig. 22); gills I–VI with two lamellae, upper lamella rounded and well tracheated but smaller than lower lamella; gill VII simple, subtriangular, broader than previous gills. Lateral margins of segments I–VII without lateral spines; segment VIII with 4–6 lateral spines; segment IX with 8–12 lateral spines.

Discussion

The genus *Cloeon* has an almost worldwide distribution as it is only absent from the Neotropics (Gattolliat



Figs. 18–23. *Cloeon* sp., larva – **18**. Labrum (anterior view). **19**. Left maxilla (posterior view). **20**. Prementum of labium (posterior view). **21**. Tarsal claw of right hind leg. **22**. Thorax and abdomen (dorsal view). **23**. Scales, scale bases, setae and marginal spines of tergite II. – Scale lines: 1 mm (22), 100 µm (19, 20), 80 µm (18), 70 µm (21), 40 µm (23).

& NIETO 2009). With 73 species, it is one of the most diversified genera of Baetidae. Five species are recorded from Australia (SUTER 1986), three from Papua New Guinea (ULMER 1920, VAN BRUGGEN 1957), one from Polynesia (Samoa) (TILLYARD 1928) and one from Vanuatu (KIMMINS 1936). Unfortunately, most of the Australasian species are only known at the imaginal stage; only the Australian species *Cloeon fluviatile*, *C. paradieniensis* and *C. tasmaniae* were described at both larval and imaginal stages (SUTER 1986, 2000). Larvae of *Cloeon* sp. from Espiritu Santo clearly differ from these Australian species known at the larval stage: from *Cloeon fluviatile* and *C. paradieniensis* by the shape of the labial palp (Fig. 20) and the size of the denticles of the tarsal claws (Fig. 21), from *C. paradieniensis* and *C. tasmaniae* by the absence of stout setae at the apex of the maxillary palp (Fig. 19), and from all three species by the absence of lateral spines on tergum VII and the more abundant lateral spines on tergum IX.

Cloeon erromangense KIMMINS, 1936, was the sole species of Baetidae so far recorded from Vanuatu. It was found on Erromango, an island located about 300 km southeast of Espiritu Santo, and described from the male imago (KIMMINS 1936). As only male imagos of *Cloeon erromangense* and only larvae and a female subimago of *Cloeon* sp. from Espiritu Santo are known, there are no reliable morphological characters that allow a secure association of the material from the two islands. The similar size and the absence of colour pattern in male imagos do not allow the rejection of this association either. Because some species of *Cloeon* are known to have a wide distribution (GATTOLLIAT & RABEANTOANDRO 2002, MONAGHAN et al. 2005), larval specimens collected in Espiritu Santo could even be conspecific with one of the species from Papua New Guinea only known from adults. Only further extensive collections of all life stages of these species in the Australasian realm and their association with molecular methods could help to clarify these taxonomic uncertainties.

4 References

BOUCHET, P., LE GUYADER, H., & PASCAL, O. (2008): Des voyages de COOK à l'expédition Santo 2006: un renouveau des explorations naturalistes des îles du Pacifique. – Journal de la Société des Océanistes **126–127**: 167–185.

FLOWERS, R. W. (1990): Ephemeroptera on the Fiji Islands. – In: CAMPBELL, I. C. (ed.): Mayflies and Stoneflies: Life story and Biology, pp. 125–134; Dordrecht (Kluwer Academic Publishers).

FUJITANI, T., HIROWATARI, T. & TANIDA, K. (2005): *Labiobaetis* species of Japan, Taiwan, and Korea, with a new synonym of *L. atrebatinus* (Eaton 1870) and reerection of the subspecies *L. atrebatinus orientalis* (Kluge 1983) (Ephemeroptera, Baetidae). – Limnology **6**: 141–147.

GATTOLLIAT, J.-L. & RABEANTOANDRO, S. Z. (2002): The genus *Cloeon* (Ephemeroptera, Baetidae) in Madagascar. – Mitteilungen der schweizerischen entomologischen Gesellschaft **74**: 195–209 (2001).

GATTOLLIAT, J.-L., MONAGHAN, M. T., SARTORI, M., ELOUARD, J. M., JAMES, H., DERLETH, P., GLAIZOT, O., DE MOOR, F. & VOGLER, A. P. (2008): A molecular analysis of the Afrotropical Baetidae. – In: HAUER, F. R., STANFORD, J. A. & NEWELL, R. L. (eds.): International Advances in the Ecology, Zoogeography and Systematics of Mayflies and Stoneflies, pp. 219–232; Berkeley (University of California Press).

GATTOLLIAT, J. L. & NIETO, C. (2009): The family Baetidae (Insecta: Ephemeroptera): synthesis and future challenges. – In: STANICZEK, A. H. (ed.): International Perspectives in Mayfly and Stonefly Research, Aquatic Insects **31** (Suppl. 1): 41–62.

KIMMINS, D. E. (1936): Odonata, Ephemeroptera, and Neuroptera of the New Hebrides and Banks Island. – Annals and Magazine of natural History **10**: 68–88.

LUGO-ORTIZ, C. R., MCCAFFERTY, W. P. & WALTZ, R. D. (1999): Definition and reorganization of the genus *Pseudocloeon* (Ephemeroptera: Baetidae) with new species descriptions and combinations. – Transactions of the American entomological Society **125**: 1–37.

MALZACHER, P. & STANICZEK, A. H. (2007): *Caenis vanuatensis*, a new species of mayflies (Ephemeroptera: Caenidae) from Vanuatu. – Aquatic Insects **29**: 285–295.

MONAGHAN, M. T., GATTOLLIAT, J. L., SARTORI, M., ELOUARD, J. M., JAMES, H., DERLETH, P., GLAIZOT, O., DE MOOR, F. & VOGLER, A. P. (2005): Trans-oceanic and endemic origins of the small minnow mayflies (Ephemeroptera, Baetidae) of Madagascar. – Proceedings of The Royal Society B (Biological Sciences) **272**: 1829–1836.

MUELLER-DOMBOIS, D. & FOSBERG, F. R. (1998): Vegetation of the tropical Pacific Islands, 733 pp.; New York (Springer).

MÜLLER-LIEBENAU, I. (1984): New genera and species of the family Baetidae from West-Malaysia (River Gombak) (Insecta: Ephemeroptera). – Spixiana **7**: 253–284.

SUTER, P. J. (1986): The Ephemeroptera (Mayflies) of South Australia. – Records of the South Australian Museum **19**: 339–397.

SUTER, P. J. (2000): *Edmundsiops hickmani* sp. nov., *Offadens frater* (Tillyard) nov. comb. and description of the nymph of *Cloeon tasmaniae* Tillyard (Ephemeroptera: Baetidae) from Tasmania. – Papers and Proceedings of the Royal Society of Tasmania **134**: 63–73.

TILLYARD, R. J. (1928): Plectoptera. – In: TILLYARD, R. J. & LESTAGE, J.-A.: Insects of Samoa and other Samoan terrestrial arthropoda, Part VII, fascicle 2: 45–51; London (Trustees of the British Museum).

ULMER, G. (1920): Neue Ephemeropteren. – Archiv für Naturgeschichte, Abteilung A **11**: 1–80.

VAN BRUGGEN, A. C. (1957): On two species of mayflies from the Wissel lakes, central New Guinea (Ephemeroptera). – Nova Guinea, New Series **8**: 31–39.

WEBB, J. M. & SUTER, P. J. (2010): New combinations for the Australian species of *Baetis* (Ephemeroptera: Baetidae), with a new synonym. – Zootaxa **2668**: 63–65.

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Phylogenetic affinities of Petaluridae and basal Anisoptera families (Insecta: Odonata)

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Abstract

The petalurid genus *Phenes* has a larval proventriculus with only four dental folds. This genus is considered as the sister group of remaining Petaluridae and placed in the Pheninae **subfam. nov.** Two possible phylogenies of the Petaluridae are proposed and diagnoses of Tachopteryginae, Tanypteryginae, and Petalurinae are amended. The Petalurinae are split into Petalurini **tribe nov.** and Uropetalini **tribe nov.** The Petaluridae, Austropetaliidae and Aeshnidae are gathered in the new clade Siphonoprocta **taxon nov.** with Petaluridae sister taxa of (Aeshnidae + Austropetaliidae). The relative positions of the main basal clades Gomphida, Siphonoprocta and Cavilabiata are not solved. Within Cavilabiata the Cordulegastridae and Neopetaliidae are considered sister taxa and are gathered in the Cordulegastroidea **comb. nov.**, and the Chlorogomphidae are considered to represent the sister group of all remaining Cavilabiata or to represent the sister group of the Cordulegastroidea.

Keywords: *Phenes*, *Tanypteryx*, *Tachopteryx*, *Uropetala*, *Petalura*, Siphonoprocta taxon nov., Austropetaliidae, Aeshnidae, Chlorogomphidae, Neopetaliidae, Cordulegastridae, proventriculus, phylogeny, larva, Chile.

Zusammenfassung

Die Petaluriden-Gattung *Phenes* hat einen larvalen Proventriculus mir nur vier Zahnfalten. Diese Gattung wird als Schwestergruppe der übrigen Petaluridae angesehen und in die Subfamilie Pheninae **subfam. nov** gestellt. Zwei mögliche Stammbäume der Petaluridae werden vorgeschlagen, und die Diagnosen der Tachopteryginae, Tanypteryginae und Petalurinae werden verbessert. Die Petalurinae werden in die beiden Tribus Petalurini **tribe nov.** und Uropetalini **tribe nov.** aufgespalten. Petaluridae, Austropetaliidae und Aeshnidae werden in dem neuen Stamm Siphonoprocta **taxon nov.** zusammengefasst, mit den Petaluridae als Schwestergruppe der (Aeshnidae + Austropetaliidae). Die Beziehungen zwischen den basalen Hauptstämmen Gomphida, Siphonoprocta und Cavilabiata bleiben vorerst ungelöst. Innerhalb der Cavilabiata werden die Cordulegastridae and Neopetaliidae als Schwestergruppen angesehen und in den Cordulegastroidea **comb. nov.** zusammengefasst, und die Chlorogomphidae sind entweder die Schwestergruppe aller anderen Cavilabiata oder die Schwestergruppe der Cordulegastroidea.

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1 Introduction

The family Petaluridae consists of a few relict modern species with only 11 species and five genera listed. Most of these species are distributed all around the Pacific, *Tanypteryx* (two species) is found in Japan and in Western USA and Canada, *Phenes* (one species) in Chile, *Petalura* (five species) in Australia, and *Uropetala* (two species) in New Zealand. The genus *Tachopteryx* (one species) is the exception with an Atlantic distribution in eastern USA.

The distribution pattern of this family and a set of possible archaic characters and traits suggests a great antiquity for the group. Nevertheless, its phylogenetic position within the suborder Anisoptera is controversial, and the

basal phylogeny of the four main clades (Gomphoidea, Aeshnoidea, Petaluroidea and Libelluloidea), all rooted in the Jurassic, is still disputed (among others: Pfau 1991, Lohmann 1996, Carle 1995, Nel et al. 1998, Bybee et al. 2008, Fleck et al. 2008, Dumont et al. 2010).

The classification of Petaluridae is also controversial for the few published works using systematic reasoning (Fraser 1933, 1957; Nel et al. 1998). In the most recent one, the genus *Phenes* is placed within the Tachopteryginae although any characters are considered as autapomorphies of the Petalurinae.

This is illustrating the puzzling classification of the family. Consequently, every new element susceptible to contribute to the systematics and phylogeny of the Petaluridae should be mentioned. The larva of *Phenes* exhibits a unique organization of the proventriculus within the Petaluridae. This discovery represents the start point of revisional notes based on the adults of all genera and most of their larvae.

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2 Materials and methods

Material examined

Petalura gigantea: 1 ♂, 1 ♀, Australia, coll. Staatliches Museum für Naturkunde Stuttgart, Germany (SMNS); *Petalura ingentissima*: 1 ultimate instar (=F-0) exuvia (external morphology), Australia (coll. Butler, United Kingdom); *Phenes raptor*: 1 ♂, 1 ♀, 1 F-0 larva, Chile (SMNS). 1 F-0 larva, Chile (coll. Fleck); *Tachopteryx thoreyi*: 1 ♂, 1 ♀, USA (SMNS). 1 penultimate instar (F-1), 1 F-3 larva, USA (coll. Fleck); *Tanypteryx hageni*: 1 ♂, USA (SMNS); 1 F-0 larva, USA (coll. Fleck); *Tanypteryx pryeri*: 1 ♂, 1 ♀, Japan (coll. Fleck); *Uropetala chiltoni*: 2 ♂♂, 1 ♀, New Zealand (SMNS).

Additional non-Petaluridae material, all F-0 larvae, all in coll. Fleck except *C. dyak* in coll. Butler: *Epiophlebia superstes*, Japan; *Archipetalia auriculata*, Tasmania; *Phyllopetalia* sp. 1 and sp. 2, Chile and Argentina; *Aeshna mixta*, France; *Boyeria irene*, France; *Onychogomphus forcipatus*, France; *Gomphus vulgatissimus*, France; *Neopetalia punctata*, Chile; *Cordulegaster boltonii*, France; *Anotogaster sieboldii*, Japan; *Chlorogomphus brunneus*, Japan; *Chlorogomphus risi*, Taiwan; *Chlorogomphus dyak*, Malaysia.

Methods

The works of Tillyard (1921), Wolfe (1953), Winstanley (1981) and Rowe (1987), and personal communication of G. Theischinger (Australia) have helped to get information on *Uropetala* larvae. Information on *Tanypteryx pryeri* larva and *T. hageni* female was taken from literature (Asahina & Okumura 1949, Sugimura et al. 2001, Garisson et al. 2006).

Due to the state of preservation and the necessity to preserve rare collection material, no internal structures other than the mandibles and the proventriculus were investigated after careful dissection.

Drawings were made using stereomicroscopes Wild M3 and Leica MZ 12.5 with camera lucida. All the figures are original illustrations of the author, except Figs. 4, 14c–d, 15a and 16a, b.

The systematic analysis by 'hand and brain', following the principles of consequent phylogenetic systematics, was preferred to the so-called 'numerical cladistics'.

The wing terminology is that of Bechly (1996) derived from Riek & Kukalova-Peck (1984), vesica spermalis terminology is that of Pfau (2005), and the mandible terminology is that of Watson (1956).

3 Results

The proventriculus (or gizzard) is an internal bulb-shaped structure of the alimentary canal making the junction between the foregut and the midgut. The part in contact with the lumen is essentially formed by longitudinal folds (generally 16, including Anisoptera), the totality or a part of them carrying denticles placed on a sclerotized excrescence (=dental folds). The proventriculus is of great importance in Odonata phylogeny and taxonomy. The number of dental folds does not change inside a given family or even inside a group of related families. Most of Zygoptera and Epiophlebioptera have a proventriculus with 16 dental folds and are therefore considered to represent the ground plan of Odonata. It is important to note that Anisoptera have also a proventriculus with 16 folds in their ground plan. These folds are particularly well visible in the families Petaluridae, Austropetaliidae and Aeshnidae, with four main folds wearing sclerotized plates with denticles (the 'dental folds'), four medium folds (wearing sclerotizations with denticles only in some Petaluridae), and eight minor folds (see, for example, Fig. 13a1, e1, f1). Within the Zygoptera, the family Amphipterygidae exhibits a unique proventriculus with 32 folds and the superfamily Lestinoidea (=Lestomorpha sensu Bechly 1996) has eight dental folds (Bechly 1996). Anisoptera exhibit only four dental folds except the Petaluridae that are known to have a remarkable proventriculus furnished with eight dental folds.

The proventriculus structure of *Phenes* was hitherto unknown. The proventriculus dissection of two *Phenes raptor* larvae (from different localities) clearly shows that this species presents only four dental folds (Fig. 13a, b). Thus, modern Petaluridae have four or eight dental folds. This remarkable result has consequences on the taxonomy and phylogeny of Petaluridae.

Phylogenetic consequence

The most recent works using morphological characters or morphological characters combined with molecular ones let the basal phylogeny of Anisoptera unsafe since nodes implying the main clades Gomphoidea, Aeshnoidea, Petaluroidea and Libelluloidea are not or insignificantly supported (Rehn 2003, Bybee et al. 2008); these works therefore will not be considered in this study. Recent phylogenies using molecular data are in conflict and propose different topologies for basal Anisoptera families (Fleck et al. 2008, Carle et al. 2008, Dumont et al. 2010). Pfau (1991), Lohmann (1996) and Carle (1995) do not consider the petalurids as the most inclusive group within Anisoptera. The different phylogenetic hypotheses of these authors have been invalidated by Nel et al. (1998). After Bechly (1996) followed by Nel et al. (1998) the alleged eight dental fold proventriculus of Petaluridae represents a symplesiomorphy within the Anisoptera and constitutes the main argument to place the Petaluridae as sister group of all remaining Anisoptera (see below). The presence of only four dental folds in one representative of Petaluridae, gives distinctly less weight to the argument of these authors. Additionally, from a cladistic point of view, it is unjustified to consider an eight dental fold proventriculus as plesiomorphy, because in the outgroup taxa this number is 16 (ground plan of Zygoptera considered as monophyletic, and Epiophlebioptera). As this character does not exist in the ground plan of the outgroup taxa, it could be as well legitimately considered as a synapomorphy of the Petaluridae (Carle 1995, Lohmann 1996). Considering these facts, and considering *Phenes* as probable sister group of remaining modern Petaluridae because this genus possesses a set of plesiomorphic characters within the family (see below), I regard a proventriculus with four dental folds as belonging to the ground plan of Anisoptera (the parsimony implies only one change for the most advanced Petaluridae, this change being considered furthermore as an autapomorphy rather than a reversion to a hypothetical plesiomorphic state). The hypothesis of Bechly (1996) and Nel et al. (1998) should be reexamined. In the case of an invalidation of this hypothesis and because other morphological studies are in conflict, it will be necessary to investigate new characters and to reinterpret other ones in order to try to clarify the internal phylogeny of Petaluridae as well as the position of Petaluridae within the Anisoptera.

Taxonomic consequence

As already mentioned above, the number of dental folds is extremely conserved for a given family or even for a group of related families, and except now the Petaluridae no other Epiproctophora family possesses a variable number of dental folds. The extraordinary peculiarity of *Phenes* regarding the proventriculus as well as a set of other remarkable characters place the genus rather well apart from other modern petalurids, and allow to erect a new subfamily:

Pheninae **subfam. nov.**: Type genus: *Phenes* Rambur, 1842; type species: *Phenes raptor* Rambur, 1842; includes only the genus *Phenes*.

Diagnosis

L a r v a

(1) Antennae seven-segmented, straight, and only moderately thickened (Fig. 1). – Antennae distinctly more thickened in *Tachopteryx* and *Tanypteryx*, and distinctly horizontally curved (in dorsal view basally divergent and distally convergent) in *Petalura* and apparently also in *Uropetala*.

(2) Lateral ocelli covered each by a strong hemispheric and hairy excrescence, and dorso-lateral margins of the occiput, also furnished with rather well developed pubescent excrescences (Fig. 1).

(3) Pronotal shield with lateral margins trilobed (Fig. 1).

(4) Synthorax with a large conical spine near mesinfraepisternum (Fig. 1).

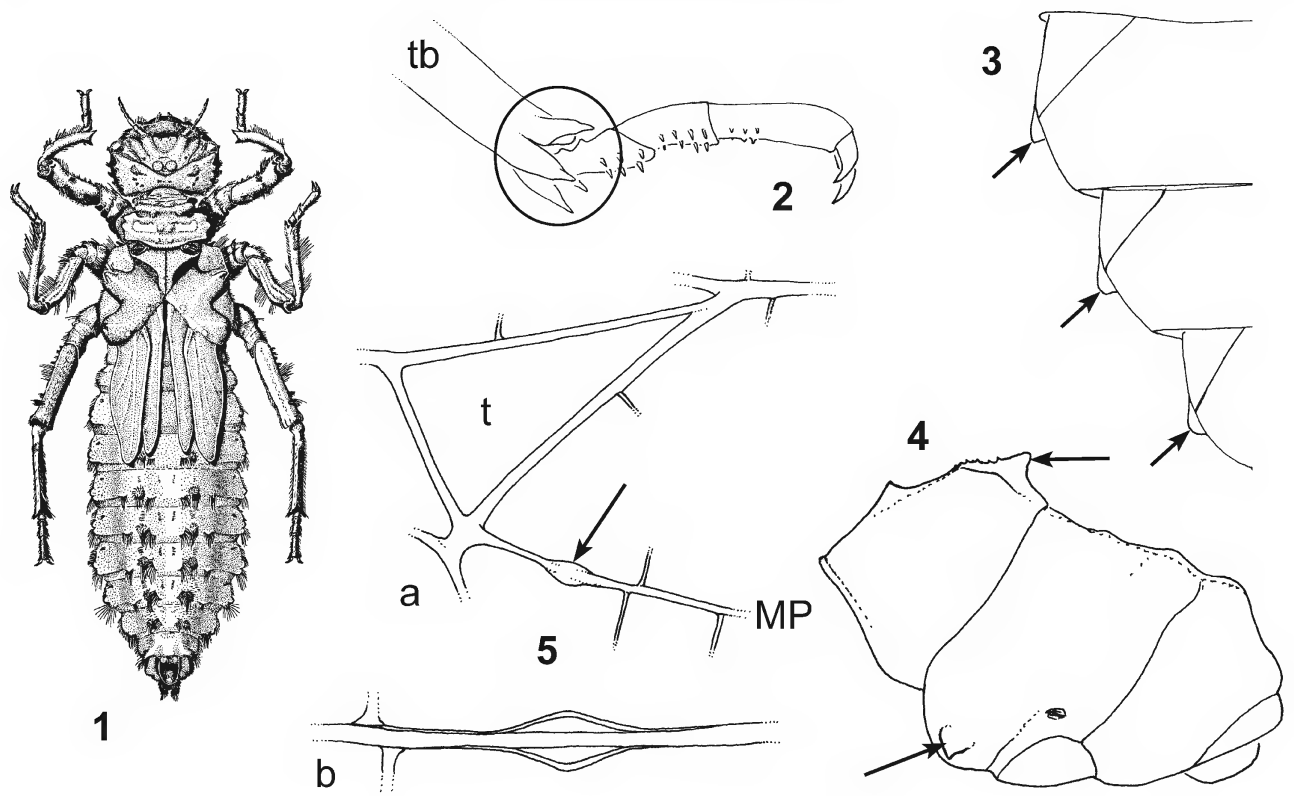
(5) Tibiae of all legs ending with four strong tibial spurs which are of approximately the same size (Figs. 1, 2). – In other Petaluridae one to three spurs are distinctly more reduced at least on the prothoracic and metathoracic legs.

(6) Distal margin of abdominal tergites with four pairs of symmetric brushes of setae well visible on S4–S8 or S4–S9 (=abdominal segments 4–8 or 4–9). One of this couple of brushes is placed on prominent cuticular tubercles ('Zottenhöcker') on S3–S9 (those of S3 small), and more laterally, another pair of brushes is placed on smaller tubercles on S3–S8 (those of S3 small) (Fig. 1). – This 'Zottenhöcker' arrangement is unique within the Petaluridae. Contra the opinion of Nel et al. (1998) the larva of *Tachopteryx* is deprived of 'Zottenhöcker', and other petalurid larvae do not possess 'Zottenhöcker', except maybe the Japanese *T. pryeri* which could have a pair of low protuberances on S6–S9 (antagonist data published in Wolfe 1953 and Sugimura et al. 2001). Lastly, the larvae of *Petalura* do not present the typical paired medio-lateral brushes of long setae, and the larvae of *T. hageni* have particularly weakly developed brushes.

(7) Blunt and rather small lateral lobes present on S2–S9, homologous to the 'lateral spines' of other Anisoptera (those of S2 very small) (Figs. 1, 3).

(8) Anal pyramid with epiproct acute, and paraprocts ending as a ventral short blunt spine distal to siphon (Fig. 14a–d). – In other Petaluridae, the epiproct is not acute and appears in dorsal view broadly rounded or even somewhat truncated, and the paraprocts are ending abruptly at siphon.

(9) Proventriculus with four dental folds (Fig. 13a, b).



Figs. 1–5. *Phenes raptor*. – **1**. Larva, habitus (modified from NEEDHAM & BULLOCK 1943). **2**. Larva, mesothoracic leg, tarsus and apex of tibia (tibial spurs are encircled; tb = tibia). **3**. Larva, right lateral margin of abdominal segments 6–8, ventral view (note the modest but distinct lateral expansions). **4**. Adult, synthorax, left lateral view (modified from GARRISON et al. 2006; the arrows indicate the ventral conical spur and the dorsal antealar ridge). **5**. Adult, left hindwing, 'MP articulation', localization on MP, **a**. ventral view, **b**. detail, dorsal view (t = discoidal triangle).

Adult

(10) Lateral clypeal lobes strongly developed and acute, and in frontal view clypeal lateral margins distinctly sigmoid (Fig. 16a). – In other Petaluridae, the lobes are generally distinctly less developed and not so strongly pointed. Only *Uropetala* has pointed and rather well developed clypeal lobes, they are nevertheless somewhat less strongly developed than those of *Phenes*, and the lateral margins are not sigmoid.

(11) Frons deprived of a supplementary large transverse carina placed between dorsal margin and clypeal margin (Fig. 16a). – A large medial transverse carina is present in other Petaluridae.

(12) Posterior side of occiput with a pair of small horns, and postocular lobes with some distinct blunt spines (Fig. 16b).

(13) Antealar ridge ending as a strong spur, and ventral part of mesepimeron developed as a strong cone (Fig. 4).

(14) MP just distal to discoidal triangle with a kind of articulation (Fig. 5). – This structure is also present in *T. pryeri*, but distinctly less developed.

(15) Presence of a short postnodal pseudo-ScP.

(16) Distal side of pterostigma greatly shifted basally, consequently the pterostigma (relative to postnodal area) appears shorter than that of other modern petalurids. – *Tanypteryx* has also a short pterostigma and only slightly longer than that of *Phenes*, but contrary to this species it occupies a more distal position.

(17) Pterostigmal brace strongly separated from basal side of pterostigma.

(18) Synthorax, except for a small darkened humeral spot, nearly uniformly greenish to greyish-brown or yellowish-brown. – In other Petaluridae the synthorax presents well to rather well contrasting sombre and paler stripes.

(19) Unique shape of the strongly developed male anal appendages.

(20) Ovipositor not upwards curved, and except shorter styli, similar to that found in Austropetaliidae and Aeshnidae (Fig. 15a). – In other Petaluridae it is variously upturned.

4 Discussion

4.1 Systematic position of Pheninae **subfam. nov.**

FRASER (1933) splits the Petaluridae into two subfamilies: the Petalurinae including the genera *Petalura*, *Uropetala* and *Phenes*, and the Tachopteryginae including *Tachopteryx* and *Tanypteryx*. This author in 1957 moves *Tachopteryx* to the Petalurinae and consequently places the genus *Tanypteryx* into Tanypteryginae. The most recent comprehensive work dealing with the petalurids and partly inspired from BECHLY (1996) is that of NEL et al. (1998). These authors split the Petaluridae into Petalurinae and Tachopteryginae, this last subfamily being made by the tribes Tanypterygini and Tachopterygini. The latter includes the genera *Tachopteryx* and *Phenes*.

4.1.1 The Tachopteryginae sensu NEL et al. (1998), a critical view

NEL et al. (1998) proposed the following autapomorphies to define the Tachopteryginae: (1) distal accessory oblique vein suppressed (unique within Petalurida), and (2) the metaposternum on the venter of the adult metathorax more or less expanded and hairy ('ventral metathoracic tubercle'). For the genus *Phenes* these two characters are in conflict with two apomorphic characters defining the Petalurinae and considered by NEL et al. (1998) as convergences.

The character (1) is no longer unique within Petalurida since it is also present in *Eotanypteryx* Bechly, 2007 (from Brazil) and *Anglopetalura* Coram & Nel, 2009 (from Great Britain), species probably belonging to the petalurid fossil family Cretapetaluridae. The fact that the third closely related genus *Cretapetalura* presents two oblique veins, and the fact that five from a total of 13 genera (about 38 %) belonging to the Petalurida sensu NEL et al. (1998) do not possess a second oblique vein suggest that the character is rather variable within the Petalurida.

The oblique vein seems to be correlated to the presence of bulb located on the RP3/4. In *Petalura* and *Uropetala* the distal oblique vein originates from this bulb or a little distally (0–4 cells) (Fig. 6a), this variability being probably due the progress of a larval trachea originating from RP2 and joining the IR2 (not studied in this work due to inadequate state of preservation or maturation of larval tracheation). In *Phenes*, the bulb is well developed, the crossveins between RP2 and IR2 are straight proximal to the bulb, the first crossvein just distal to the bulb is distinctly arched and generally slightly stronger and slightly more curved and even very slightly more oblique than the following ones (Fig. 6b, structure also faintly visible on fig. 53 in GARISSON at al. 2006). Therefore the distal

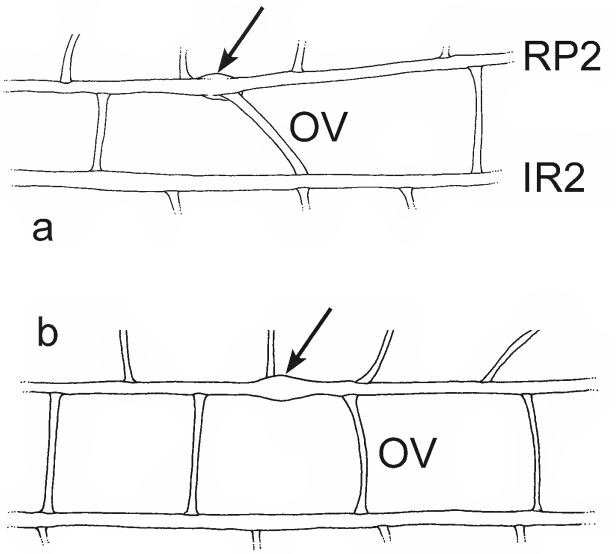


Fig. 6. Second oblique vein and 'RP2 bulb'. – **a**. *Uropetala chiltoni*, proximal part on the left, dorsal view. **b**. *Phenes raptor*, proximal part on the left, ventral view. – OV = distal oblique vein. – The arrows indicate the emplacement of the 'bulb'.

oblique vein in *Phenes* cannot be considered as completely lost, and the underlying mechanism "to build" a distal oblique vein considered as still present. The same phenomenon can be observed, in *Tachopteryx thoreyi* and *Tanypteryx pryeri*. For these species the bulb is always well visible, the curvature of the veins is sometimes less distinct than the ones observed in *Phenes*.

Within Petaluridae the character is not absolute for a given species and apparently somewhat variable from an individual to another one. From the studied material, the female *Uropetala* presents all oblique veins poorly indicated and one male has an indistinct proximal oblique vein in the forewings; the male *Petalura* presents an indistinct distal oblique vein in one forewing and in one hindwing and the female poorly indicated proximal oblique veins on the left wings; the male *T. pryeri* presents a well indicated distal oblique vein in one hindwing; more than 20 % of the individuals of *T. pryeri* from the set presented in SUGIMURA et al. (2001) have at least one wing with two oblique veins; the hindwing of *T. hageni* illustrated in GARRISON et al. (2006) presents two oblique veins. In the possibly closely related families Aeshnidae and Austropetaliidae (see below) a similar situation occurs: numerous Aeshnidae present two oblique veins, for example this characters can be considered as belonging to the genera *Neuraeschna* and *Gynacantha*; it is also very frequently found in numerous other genera at species level or at individual level. Within Austropetaliidae it seems that the genus *Hypopetalia* possesses two oblique veins, the proximal one being less

bent than the distal one. This character needs confirmation since only very few wings (n = 6) have been checked, anyway it demonstrates the presence of two oblique veins inside the small family Austropetaliidae.

In conclusion and in concordance to the opinion of LOHMANN (1996), I consider the character (1) as atavistic and of low phylogenetic value (homoplastic), with a relative facility to be switched on or switched off for a given species and even for a given wing (reactivation of a latent potential).

The character (2) is also present in *Uropetala* with a development comparable to that of *Tachopteryx*. A ventral metathoracic tubercle represents therefore a possible symplesiomorphy of Petaluridae secondarily reversed in *Petalura*. Nevertheless, the polarization of the character is problematic since apparently found with variable development in the modern Petaluridae and unknown in the fossil stem groups Aktassiidae, Cretapetaluridae and Protolindeniidae. Therefore this character is of low phylogenetic value and like character (1) it should be removed from the Petaluridae phylogeny until fossil information allows a better polarization.

The characters of NEL et al. (1998) to define the Tanypteryginae are dismissed and this subfamily is no longer supported.

4.1.2 The Tachopterygini sensu NEL et al. (1998), a critical view

NEL et al. (1998) proposed the following autapomorphies to define the Tachopterygini: (1) dull body colouration, convergent to *Petalura*; (2) hairy lateral tubercles ('Zottenhöcker') of the larval abdomen very distinct; (3) larva secondarily not burrowing gallery.

Tachopteryx thoreyi shows pale greyish or beige stripes alternating with blackish ones, the contrast between the stripes is strong (particularly evident in lateral view) except for the large antehumeral quadrangular stripes which are distinctly darkened. *Tanypteryx pryeri* has a semblable general colouration pattern and a strikingly similar thoracic colour pattern with large pale interpleural and metepimeral stripes and also the same noticeable darkened large antehumeral quadrangular stripes which can be considered as dull colour. The main difference between the species is the yellow to yellowish colour replacing the greyish one. Most of the species of *Petalura* are brownish to dark brown coloured with thin yellow or yellowish marking. As they do not have the plesiotypic black and lemon-yellow colours, already mentioned by NEL et al. (1998), they can be considered to arbour 'dull' colouration. *Uropetala* presents intermediate thoracic pattern with rather well developed pale antehumeral stripes and rather narrow pale lateral stripes, the pale coloured areas on head, thorax and abdomen that contrast with the dark brown to blackish ground colouration is usually not bright lemon-yellow but pale yellowish or even whitish (except, apparently, mature specimen of *U. carovei*) and should be considered as a 'dull' colouration, additionally the end of the abdomen also has apparently brownish spots on black ground. Except *Tanypteryx hageni* with a plesiotypic black/lemon-yellow pattern of colouration, all other Petaluridae present deviant colouration in variable proportions. The colouration is highly variable within this family and no inference can be made with accuracy.

Alternative hypothesis conflicting with that of NEL et al. (1998) can also be evoked, for example, the strikingly similar thoracic pattern shared with *Tachopteryx* and *Tanypteryx* (*T. pryeri*) can be interpreted as apomorphic.

Contrary to all other Petaluridae, *Phenes* does not possess any thoracic stripes, and except a small lateral sombre spot, the thorax appears nearly uniformly brownish green to yellowish brown. The unique absence of well contrasting lateral stripes on thorax allows to think that *Phenes* is well separated from other living Petaluridae. Since the colours are variable within the Petaluridae and since the pattern of colouration is totally different between *Phenes* and *Tachopteryx* I interpret the superficial 'dull' colouration (pale greyish tendency in *Tachopteryx*, greenish brown or yellowish brown tendency in *Phenes*) as probable 'camouflage' convergence between the two genera.

For all these reasons I consider the character (1) as doubtful, and colouration pattern of low pertinence for the phylogeny of Petaluridae.

The character (2) is no longer valid since *Tachopteryx* definitively does not possess dorsal abdominal tubercles. The brushes of long setae are well developed but they are not placed on tubercles.

Gallery burrowing larvae of Petaluridae are apparently unique among Odonata, and the larval habits of fossil groups of Petalurida remain unknown. Therefore, the method of parsimony imposes to consider non-tunnelling larvae as a plesiomorphy, and the larvae of *Phenes* and *Tachopteryx* primitively unable to construct galleries. Moreover, the larvae of *Phenes* and *Tachopteryx* possess lateral abdominal extensions, a plesiomorphic condition apparently not seen in other Petaluridae, supporting the non-burrowing condition as plesiomorphic too. Consequently the character (3) is considered to be not an apomorphy acquired secondarily, but to be a plesiomorphy primitively present.

The characters of NEL et al. (1998) to define the Tanypterygini are dismissed and this tribe is no longer supported.

Remarks: The larva of *Phenes* I have captured in its natural environment was found in a small pool filled with a few millimetres water and containing a kind of dark liquid vegetal mud and abundant decayed vegetation including numerous short sticks of various diameters. After disturbance due to the collection of the pool material into a net, the larva, one of the largest among living Odonata, was only found after careful and systematic examination of the decayed material. First, the larva can stay minutes completely motionless, and secondly, it is remarkably similar to some of the small sticks present in its vicinity. This similitude is not only due to the same colour (the larva was partly covered by a layer of mud) and comparable shape and size of some decayed sticks, but also due to the comparable tactile feeling and consistence. So, that the first second in my hand I though the larva was another old decayed piece of wood. The larva of *Tachopteryx* rather flattened and with distinct abdominal lateral extensions can be considered to have a leaf-mimicry camouflage, that of *Phenes* more cylindrical with rather small rounded abdominal lateral extensions and multitude dorsal rounded excrescences can be considered to have a decayed-stick-mimicry camouflage.

4.1.3 Position of the Pheninae

The subfamily Pheninae is regarded as the sister group of remaining Petaluridae because it possesses the following possible plesiomorphies:

(1) Larval proventriculus with four dental folds. – As I regard a four dental folds proventriculus belonging to the ground plan of Anisoptera, and in view of the remaining plesiomorphies encountered in *Phenes*, I consider the four dental fold of this genus as a plesiomorphy.

(2) Larval antennae seven-segmented, straight, and only moderately thickened. – The more thickened and hairy antennae of *Tachopteryx* and *Tanypteryx*, the horizontally curved antennae of *Petalura* and *Uropetala*, and the six-segmented antennae of *Tanypteryx* and *Uropetala* are all considered as derived states (see also chapter 4.2.1 below).

(3) Larval abdominal lateral lobes present and homologous to the 'lateral spines' of other Anisoptera and Epiophlebioptera. – Symplesiomorphy also present in *Tachopteryx*.

(4) Larval epiproct rather acute in dorsal view. – A pointed epiproct belongs to the groundplan of Anisoptera and Epiophlebioptera, it is secondarily more rounded in other Petaluridae, and truncated or bifid in the ground plan of (Austropetaliidae + Aeshnidae) (compare Fig. 14a–d, k–n and Fig. 14e, j).

(5) Paraprocts ending as a ventral spine distal to siphon. – In other Petaluridae the paraprocts are distinctly truncated at siphon and do not possess a ventral pointed process, or only an extremely reduced remnant still faintly visible in *Tachopteryx*. The remarkable shape of the paraprocts observed in *Phenes* is nearly identical to that found in Austropetaliidae and Aeshnidae. It is considered to be homologous and represents a synapomorphy belonging to the ground plan of (Petaluridae + Austropetaliidae + Aeshnidae) (see below) (compare Fig. 14a–d, g–n and Fig. 14e, f).

(6) Larva primitively not burrowing galleries. – Symplesiomorphy also present in *Tachopteryx*.

(7) Pterostigmata relatively short. – Also present in *Tanypteryx*, but possibly reversal in this genera since several additional reversions are present in wing characters.

(8) Pterostigmal brace strongly separated from basal side of pterostigma. – The Protolindeniidae and Cretapetaluridae have also strongly separated brace from stigma; this character is therefore considered as symplesiomorphy and present in the ground plan of Petalurida, and secondarily reversed in most Petaluridae (see also Nel et al. 1998: 50).

(9) Adult frons, in frontal view, without a supplementary large transverse carina. – As a rather similar character is also present in Austropetaliidae and several Aeshnidae, including the basal genus *Gomphaeschna*, it cannot be ruled out that a transverse supplementary carina represents a synapomorphy of the clade (Petaluridae + Austropetaliidae + Aeshnidae) (see below), with a reversed state in *Phenes*.

(10) Female ovipositor not significantly up-turned, and except shorter styli, similar to the ovipositor found in many Austropetaliidae and Aeshnidae. – The ovipositor of *Tanypteryx*, *Uropetala* and *Petalura* is distinctly curved upwards, that of *Tachopteryx* represents an intermediate stage with solely a distal strong increase of the valves curvature (Fig. 15).

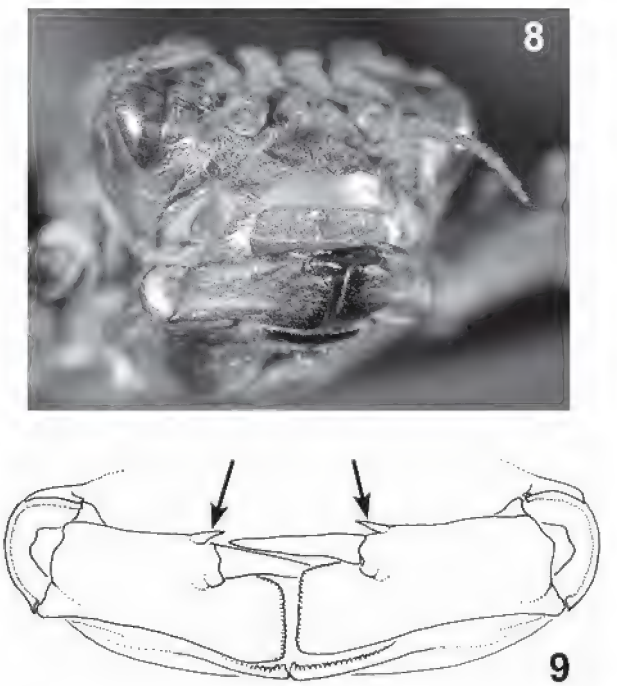
Remarks on the anal loop: Within the Petalurida, a posteriorly open anal loop is present in *Protolindenia*, *Anglopetalura*, *Aeschnogomphus*, *Aktassia*, *Phenes*, *Tanypteryx* and *Tachopteryx*. The anal loop is posteriorly zigzagged in *Mesuropetala*. It means that more than 50 % of known petalurid genera, from at least four independent groups, have a posteriorly ill defined or not defined anal loop (character unknown in *Pseudocymatophlebia*). It seems also that for a given genus, a non-negligible frequency of individuals possess an anal loop with opposite state: from the studied material, the *Petalura* male has the two anal loops distinctly closed, the *Uropetala* female has the left anal loop closed, and the right one nearly so; on the photographs on http://www.dragonflies.org/petaluri.htm, both of presented male and female *Tachopteryx* possess a posteriorly opened anal loop on one wing; one female *Phenes* in coll. Fleck has anal loops closed. The closure of the anal loop has no or low phylogenetic significance

within Petalurida, therefore this atavistic character is not considered in the present analysis to evaluate phylogenetic relationship between subfamilies, and is only used as diagnostic element for a given genus or a subfamily.

4.1.4 First hypothesis: monophyly of the groups having gallery burrowing larvae (Fig. 7)

Node 1, Petaluridae

Larvae with mask slightly concave (Figs. 8, 9) (convergent to some Zygoptera, to the gomphid genus *Archaeogomphus*, and to a lesser extent to some Gomphidae-Onychogomphini for which the concavity of the mask is less marked, see Legrand & Fleck 2005). Presence of a robust spine overlapping the base of the larval palpal moveable hook (Fig. 9) (contrary to the drawing given by Fraser 1957: fig. 45, the labial palps of *Petalura*, like all other Petaluridae, possess a robust spine surmounting the moveable hook; this probably led Nel et al. 1998 to mention erroneously its absence in *Petalura*). Larval tibiae with strong apical spurs (Fig. 2) (present and well developed in *Tachopteryx* and *Phenes*, contra the opinion of Nel et al. 1998). Larval paraprocts and epiproct forming a air respiratory siphon and bearing extremely dense alignment of thin, long and soft setae involved in the tightness and in the formation of the circular aperture (Fig. 14a–f). Adult head with bulged occiput. Pterostigmata strongly elongated, narrow with parallel anterior and posterior margin, and with their brace vein situated basal to midway between nodus and wing apex (except the forewing of numerous *Tanypteryx*). Male anal appendages strongly developed (convergent to several genera of Anisoptera). Ovipositor with styli shortened.



Figs. 8–9. *Phenes raptor*, larva. – **8**. Head, fronto-lateral view (note the slightly concave mask and the relatively narrow antennae). **9**. Labial palps, frontal view. – The arrows indicate the small and robust spines overlapping the moveable hooks.

Remarks: The Lower Cretaceous fossil genus *Argentinopetala* Petrulevicius & Nel, 2003, known only from a fragment of a wing apex, is considered as a Petaluridae incertae sedis. – The fossil genus *Nothomacromia* Carle, 1995, only known as larval stage, is considered as an Epiproctophora incertae sedis as long as the corresponding adult remains unknown.

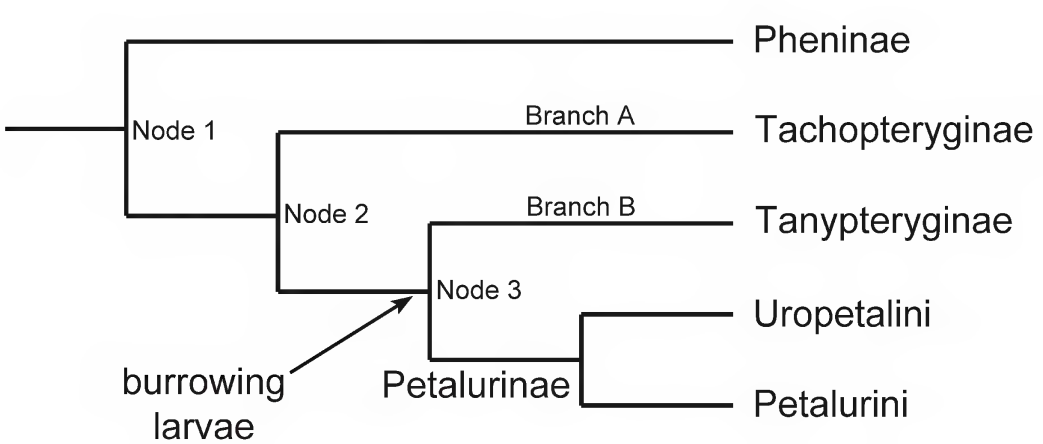


Fig. 7. Phylogenetic tree of recent Petaluridae, monophyly of the subfamilies with burrowing larvae. – For explanations see chapter 4.1.4.

Node 2

Larval proventriculus with eight dental folds (Fig. 13c, d). Larval antennae no more plesiotypically straight or moderately thickened. Larval epiproct rounded (Fig. 14e, f). Paraprocts truncated at siphon and therefore without distinct ventral tapered process (Fig. 14e, f). Pterostigmata elongated (somewhat secondarily reversed in *Tanypteryx* since pterostigmata are slightly distally shifted) with the brace vein and proximal side of pterostigma very close together or even at the same level. Adult frons, in frontal view, with a supplementary large transverse carina (Fig. 16c); this could be a plesiomorphy if this character belongs to the ground plan of (Petaluridae + Austropetaliidae + Aeshnidae) (see below). Ovipositor variably but distinctly up-curved (Fig. 15b, c).

Additional possible apomorphies:

At least some larval tibial spurs reduced in the prothoracic and metathoracic legs. – This is a speculative apomorphy which appears as a cline within the family; it implies that four strong spurs per leg, acute and of approximately equal size, belong to the ground plan of Petaluridae; all the legs of *Phenes* and the posterior legs of *Tachopteryx* and *Tanypteryx* are built on this model. This putative apomorphy receives some support because the legs of *Tachopteryx* and *Tanypteryx* still present three or four strong spurs, acute and of about equal size, whereas those of *Petalura* and *Uropetala*, the most advanced Petaluridae, present only one or two obtuse strongly developed spurs.

Larval prothoracic leg with the spur occupying the external and anterior position reduced and distinctly proximally shifted on tibia (this spur apparently lost in *Petalura*). – A speculative apomorphy (see above).

Loss or strong reduction of the larval dorsal abdominal tubercles. – Again a speculative character, but as hairy dorsal tubercles are present in Austropetaliidae, possibly also present even if reduced in *T. pryeri*, and also present (atavism?) in some basal Aeshnidae like *Telephlebia*, they can belong to the ground plan of (Petaluridae + Austropetaliidae + Aeshnidae) (see below).

Node 3

Larvae burrowing galleries. Larval lateral abdominal extensions lost. Larval dorso-lateral brushes of long setae at least less strongly developed. Larval paraprocts with process or remnant of process distal to siphon completely suppressed. Female ovipositor strongly up-curved (Fig. 15c).

Node 4, Petalurinae Needham, 1903
(sensu Bechly 1996)

Type genus: *Petalura* Leach, 1815; type species: *Petalura gigantea* Leach, 1815; included genera: *Petalura* and *Uropetala* Selys, 1857.

Larvae burrowing complex galleries comprising adjacent excavations. Larval antennae divergent at base and distally convergent. All larval legs with the strongest spurs obtuse (putative apomorphy). Prothoracic leg showing a strong development of the inner spur and variable regression of other ones, and metathoracic leg showing a strong development of two spurs, one on each side of the tarsus, and a strong regression of other spurs (putative apomorphy). Posterior veins of the well enlarged cells bordering the MA making a long and not curved weak Mspl (that of *Petalura* somewhat slightly zigzagged, that of *Uropetala* rather straight; a kind of ill defined Mspl can occur in other Petaluridae but is distinctly more poorly defined than in Petalurinae: more zigzagged, shorter, and eventually curved). Pterostigmal brace strongly oblique and slightly separated from basal side of pterostigma (putative apomorphy). Adult male cerci foliate and enormously developed, wider than width of abdominal segment 10 in dorsal view.

Additional diagnostic character: Anal loop generally posteriorly open (character also present in Pheninae).

Remark on the wing length: Nel et al. (1998) indicate that Petalurinae have wings longer than 65 mm (forewing?). This character is not valid since most of the species belonging to this family do not have a wing length exceeding 65 mm, except *Petalura ingentissima*. The wing length of *Uropetala chiltoni* does not exceed 55 mm (forewing about 49–50 mm and hindwing about 47–48 mm in the studied material), and generally the forewing length of *U. carovei* and remaining *Petalura* species have the forewing length ranging from about 53 to less than 65 mm. The forewing length of *Phenes* falls into this last range (about 53–60 mm), and that of *Tachopteryx* overlaps it (about 50–55 mm). Lastly, that of *Tanypteryx pryeri* (42–49 mm) overlaps probably slightly that of *Uropetala chiltoni*.

Petalurini **tribe nov.**

Type species: *Petalura gigantea* Leach, 1815; included species: *Petalura gigantea*; *P. ingentissima* Tillyard, 1908; *P. hesperia* Watson, 1958; *P. litorea* Theischinger, 1999; and *P. pulcherrima* Tillyard, 1913 [with doubt, could be after Theischinger (pers. comm.) a form of *P. gigantea*].

Larval antennae with the penultimate antennomere slightly enlarged and club-shaped, and with the ultimate antennomere with a distinct weaker diameter and pointed. Larval labial palp with distal margin ventrally largely rounded, correlated to a peculiar shape of the distal margin of the prementum which appears as a strong protuberant triangle with straight margins. Larval prothoracic leg with loss of two tibial spurs, and mesothoracic leg with loss of a tibial spur and loss or extreme reduction of another one. Larval abdomen with complete loss of the dorsal clumps of setae. Forewing discoidal triangle strongly

transversely elongated and costal margin shortened, correlated with an enlarged sub-discoidal triangle four- or five-celled (discoidal cell trameine-like). Sombre ground colour of the adult generally largely brown.

Uropetalini **tribe nov.**

Type species: *Uropetala carovei* (White, 1846); included species: *U. carovei* and *U. chiltoni* Tillyard, 1921.

Possible unique organization of the larval tibial spurs (see Winstanley 1981: fig. 4). Discoidal field beginning with three rows of cells in both pairs of wings. Presence of a distinct CuAb in the forewing, sometimes delimiting a small anal loop (putative apomorphy). The weak Mspl apparently straighter than that of *Petalura*, especially in the hindwing. Unique shape of the male inferior appendage within Petaluridae: not strongly developed, triangular and with basal and apical teeth.

Branch A: Tachopteryginae Fraser, 1933 (sensu nov.)

Type genus: *Tachopteryx* Uhler in Selys, 1859; type species: *Tachopteryx thoreyi* (Hagen in Selys, 1857); includes only the genus *Tachopteryx*.

Proventriculus of ultimate or penultimate instars larvae with the mound-like excrescences of the dental folds bearing 6–19 small denticles each (Fig. 13c) (unique within Petaluridae, contra Carle 1995). Larval antennae strongly thickened and hairy with the three first proximal segment of the flagellum very short and not longer than wide. Larval antennae basally convergent and distally divergent. Distal margin of the larval labial palps ventrally prolonged, making a rather acute angle with the ventral margin, correlated with a distinct ventral displacement of the distal part of the prementum. Rather flattened larval abdomen with well developed clumps of long blackish setae, not placed on tubercles, on S2–S9. Male hindwing with anal angle rather poorly developed. Adult general colour pattern greyish and blackish.

Additional diagnostic characters: Larva with lateral abdominal lateral extensions on S2–S9, those of S4–S9 spine-like and rather well developed (possible plesiomorphy). Pterostigmal brace aligned with basal side of pterostigma (character also present in Tanypteryginae). Anal loop generally posteriorly closed (character also present in Tanypteryginae).

Branch B: Tanypteryginae Fraser, 1957

Amended from Nel et al. (1998) as follows: Wing reduced in size, shorter than 50 mm (convergent to *Uropetala chiltoni*), and correlated with several further reductions and reversals (decreased number of cells; IR1 shorter and zigzagged; wing space between RP1 and RP2 not expended, with usually less than 8–9 rows of cells in *T. hageni* and less than 11–12 rows of cells in *T. pryeri*; bridge space less narrowed). In the forewing the field between RP3/4 and MA is not so suddenly widened and generally also less widened than in other Petaluridae (reversal). The forewing veins RP3/4 and MA are not curved distally, and MA is not undulate (reversal). The distal side MAb of the hindwing discoidal triangle is slightly angled, correlated with the development of a weak convex secondary vein in the postdiscoidal area (an atavistic character apparently variable within the genus since absent, extremely reduced, or indistinct in several specimens presented in Sugimura et al. 2001). Larval antennae six-segmented (convergent to *Uropetala*). Adult 'ventral metathoracic tubercle' hypertrophied.

Additional diagnostic characters: Anal loop generally posteriorly closed (a variable character also present in Tachopteryginae). Pterostigmal brace aligned with basal side of pterostigma (character also present in Tachopteryginae).

4.1.5 Second hypothesis: polyphyly of the groups with gallery burrowing larvae (Fig. 10)

Node (Tachopteryginae + Tanypteryginae)

Similar organization of the larval tibial spurs with the antero-external spur of prothoracic legs and metathoracic legs distinctly reduced and distinctly shifted proximally. – As *Uropetala* seems to have also a quite similar organization, it cannot be ruled out that this condition represents a symplesiomorphy of the clade supported by the node 2 (first tree, Fig. 7); the evolution of these shortened and shifted spurs could have led to a kind of 'buttons' apparently somewhat better developed on *Uropetala* foreleg, and by further atrophy to their complete suppression in *Petalura*.

Larval antennae stouter and more hairy than in other Petaluridae. – The antennae of *Tachopteryx* are seven-segmented, proximally convergent and distally strongly divergent, furnished laterally by a dense fringe of very long and rather strong setae, enormously widened with the base of one antenna being as wide as the distance separating the antennae, and with the three first antennomeres of the flagellum remarkably short and not longer than wide. The antennae of *Tanypteryx* are differently built, they are six-segmented, straight, furnished laterally by a moderately dense fringe of shorter and thinner setae, only slightly more thickened than other non-Tachopteryginae Petaluridae with the base of one antenna being less than half as wide as the distance separating the antennae, and with the three first antennomeres of the flagellum 'normally' built, distinctly longer than wide. With so many differences, it could be possible that superficial resemblance hides parallel evolution, therefore the homology would demand confirmation.

Distal margin of larval prementum rather straight. – The character is possibly not homologous between the two

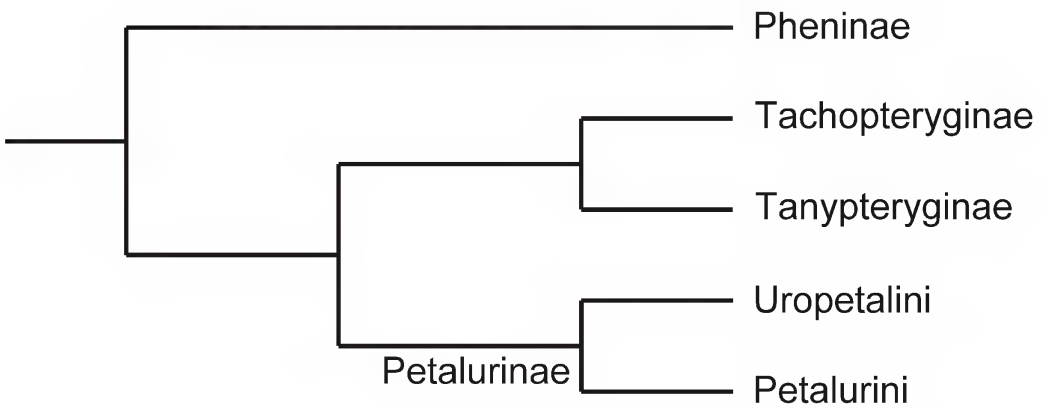


Fig. 10. Phylogenetic tree of recent Petaluridae, paraphyly of the subfamilies with burrowing larvae. – For explanations see chapter 4.1.5.

subfamilies because in *Tachopteryx* it is clearly due to the strong ventral development of the distal margin of the labial palps; the palps of *Tanypteryx* are shaped as those of *Phenes* or *Uropetala*, and contrary to *Tachopteryx*, the distal part of the prementum is not ventrally displaced.

Pterostigmal brace aligned with basal side of pterostigma. – Since some Aktassiidae – sister group of Petaluridae – have also aligned brace and basal side of pterostigma, the character is possibly subject to homoplasy.

4.1.6 Conclusion

The creation and the phylogenetic placement of the subfamily Pheninae seems to be justified in regard of the consistent set of apparently stable characters. Petrulevicius & Nel (2003) have described the oldest true Petaluridae. This fossil is dated from the Early Cretaceous (about 120 Ma) and comes from the Atlantic side of Southern Patagonia. *Phenes* occurs also in Patagonia (Pacific side) and its placement as sister group of remaining living Petaluridae receives some support. Nevertheless this information should be taken with some prudence: the Aktassiidae are dated from the Late Jurassic (about 150 Ma) and reported until now exclusively from England and Germany to China; since Aktassiidae and Petaluridae are sister groups it follows that the origin of Petaluridae must be Eurasia (in the present state of knowledge; it must be kept in mind the existence of a 30 Ma gap), therefore nothing can be inferred with certainty in matter of biogeography.

The respective phylogenetic position of the Tachopteryginae and the Tanypteryginae is somewhat problematic, and the alternative hypotheses receive some support. I tend to consider the first hypothesis (tree 1, paraphyly of the Tachopteryginae and Tanypteryginae) more satisfying since I accord a great evolutionary weight to the unique and complex ability to dig galleries and since other characters like the ovipositor shape support well the clade, contrarily to the second hypothesis (monophyly of the Tachopteryginae + Tanypteryginae) for which the characters are not entirely convincing.

4.2 Phylogenetic placement of Petaluridae within Anisoptera

As already indicated above, Nel et al. (1998) have first invalidated the already published hypotheses concerning the relative position of the four basal clades of Anisoptera, and in a second time proposed a new hypothesis. In the light of the results presented above and because of the finding of interesting or reinterpreted characters in other groups like Chlorogomphidae, their phylogenetic hypothesis must be reevaluated.

4.2.1 Critical view of the phylogenetic hypothesis of Nel et al. (1998)

I mainly follow the arguments of Nel. et al. (1998) invalidating the previously proposed hypotheses (Heidemann & Seidenbusch 1993, Pfau 1991, Lohmann 1996, Carle 1995), except for some important points presented by Carle (1995) concerning the abdominal transverse muscles (see below) and the molar part of the larval mandible. I consider a moveable molar part of the larval mandible as a plesiomorphy belonging to the ground plan of Anisoptera, and not only primitively present in Gomphidae (according to Carle 1995), but also primitively – and clearly – present in Epiophlebiidae and Chlorogomphidae (contra Carle 1995).

Nel et al. (1998) listed the following alleged plesiomorphy uniquely retained in Petalurida, making this group the most basal branch of extant Anisoptera: (1) All the larval antennomeres are thick (non-filiform). – (2) Eight-folded [dental folds] proventriculus. – (3) Larvae incapable of

locomotion by jet propulsion, because the necessary abdominal muscles are primarily absent. Nevertheless water can be expelled from the rectal chamber by action of the rudimentary transverse muscle of segment 6. The absence of jet-propulsion-locomotion and of the transverse muscle 5 probably represents a unique plesiomorphy of Petaluridae. A transverse muscle 5 belongs to the ground plan of all non-petalurid Anisoptera, while a transverse muscle 4 might represent an autapomorphy of Cavilabiata.

The antennae of *Phenes* and *Uropetala* can be considered as filiform even if they are somewhat thickened (see Figs. 1, 8). The last antennomere of *Petalura* is not at all thickened, and that of *Phenes* is not particularly thickened as well. The larvae of Zygoptera, Epiophlebioptera and Isophlebioptera, all sister groups of Anisoptera, have filiform antennae. The larvae unambiguously attributed to the Aeschnidiidae, the probable sister group of all remaining Cavilabiata, have apparently also filiform antennae. Other known fossil larvae like Nothomacromiidae are not attributed with certainty to any group for which the adult is known. The Gomphidae can be considered to have thickened antennae with an autapomorphic strong reduction of the apical fourth segment (secondarily reversed in some Onychogomphinae for which the terminal segment is greatly or even enormously widened). Larvae of Gomphaeschninae s. str. (Aeshnidae), *Palaeosynthemis*, *Archaeophya*, *Lathrocordulia* and *Austrophya* (all 'Corduliidae' s. lat.) have antennae about as thick or even thicker than those of *Phenes* and *Uropetala*, and to a lesser extent, the Cordulegastridae, some other Synthemistidae, and even some Libellulidae like *Diplacina* can be considered to have rather thickened antennae. Character (1) is somewhat variable within the Petaluridae, of uncertain polarity and subject to homoplasy, and should therefore be discarded from phylogenetic analyses. The variable development of the antennae is probably correlated to the mode of hunt of the larvae, privileging or not the sense of touch in detriment of the vision, or even to support and to rise up covering decaying mater before attacking prey.

As already mentioned above, character (2) is invalidated, and a proventriculus with four dental folds is considered belonging to the ground plan of Anisoptera.

Larvae of Petaluridae are incapable of locomotion by jet propulsion simply because they are semi-terrestrial. Semi-terrestrial larvae are not in the ground plan of Anisoptera, nor of Epiproctophora, nor of Odonata as affirmed also by Nel et al. (1998) themselves. Thus Petaluridae are secondarily semi-terrestrial, and also probably secondarily incapable of locomotion by jet propulsion, a completely useless function in their environment that led logically to a complete atrophy of useless muscles. The Zygoptera and Epiophlebioptera are not semi-terrestrial, do not possess any transversal abdominal muscle and are unable to jet propulsion. Contrary to these taxa sister groups of Anisoptera, the presence in Petaluridae of a rudimentary transverse muscle of abdominal 6 exactly suggests a reversion due to semi-terrestrial habits. Thus character (3) can also be interpreted with the reverse polarity to that given by Nel et al. (1998). A same event has probably affected the Austropetaliidae that shows strong tendency to semi-terrestrial behaviour, and even could have had a fully terrestrial ancestor. For this family the absence of at least two transverse muscles (those of S5 and S6) is due to a secondary loss, since the close sister group Aeshnidae possesses well functional transverse muscles 5 and 6, which are considered homologous to those found in Gomphidae and some Cavilabiata. In accord with Carle (1995), the evolution of transverse muscles is not certain, but it could be possible that those of the Gomphidae with their little specialized and little developed transverse muscles of S4, S5 and S6 represent the plesiomorphic state. This configuration explains easily a first evolution found in the Aeshnidae, leading to an unchanged plesiomorphic transverse elongate muscle of S6 and to a strongly specialized phragmatic muscle of S5, correlated to the loss of the transverse muscle of S4, and a second evolution found in the most derived Libelluloidea, leading to a rather unchanged plesiomorphic muscle of S6 and a strongly specialized phragmatic muscle of S4, correlated to the loss of the transverse muscle of S5.

The characters of Nel et al. (1998) are considered as unconvincing and the systematic position of Petaluridae put in question.

4.2.3 New phylogenetic hypothesis (Fig. 11)

It is not in the scope of this paper to propose a complete phylogeny of the Anisoptera (an extensive phylogeny will be published elsewhere, Fleck in prep.), the purpose being simply to try to clarify the position of the Petaluridae and the relative position of some basal groups.

Cordulegastroidea Tillyard & Fraser, 1940 **stat. nov.** (sensu Selys, 1854)

The Cordulegastridae and Neopetaliidae are considered as sister groups based on the following synapomorphies:

(1) Unique shape of the distal margin of the larval prementum (Fig. 12). – Two apical strong, acute and divergent teeth flanked each laterally by a low rectangular tooth that could be itself cut by smaller irregular denticles is not found in any other Odonata and considered as unique synapomorphy.

(2) Distal larval palpal setae shortened, at least slightly displaced dorsally, close to the moveable hook and covering it (Fig. 12).

(3) Unique organization within Odonata of the larval proventriculus which has the ventral dental folds totally

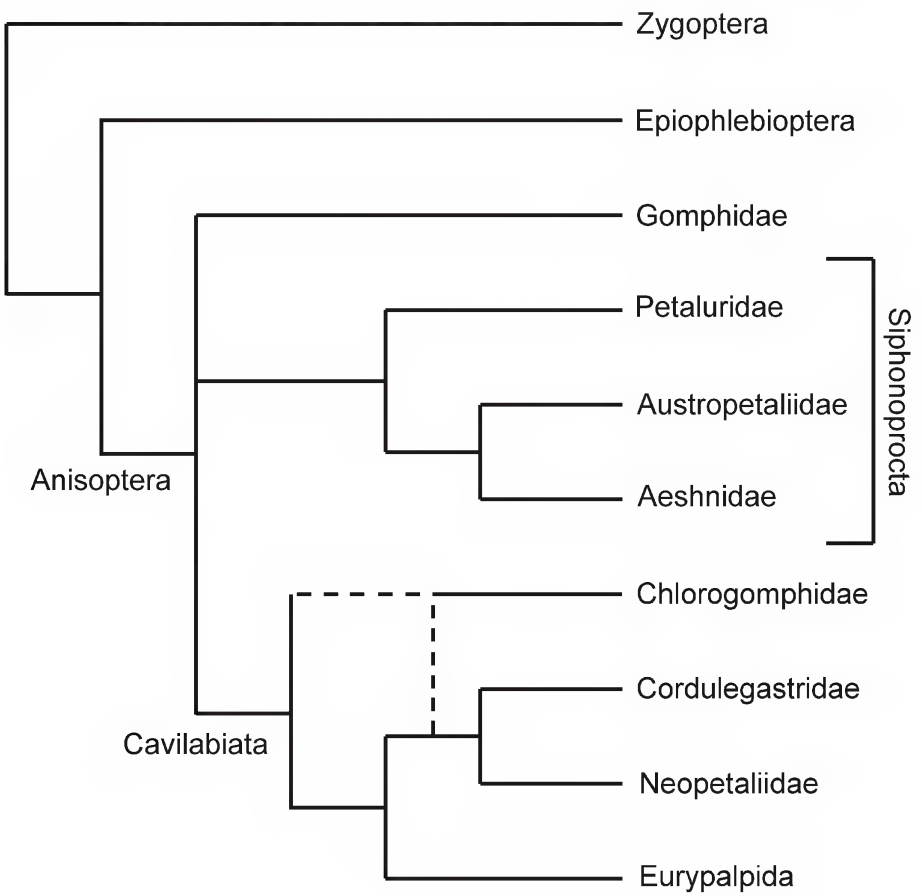


Fig. 11. Phylogenetic tree of recent Odonata.

deprived of denticles or tooth anterior to the tooth-like lobe (Fig. 13h). – In all other Cavilabiata, the presence of a moderately developed tooth or of denticles in the median part of the ventral dental folds is considered as a rest of the primitive rasp-like dentition.

(4) Apex of the tooth-like lobe of the ventral dental fold slightly anteriorly shifted (Fig. 13h). – Possibly correlated with the previous character.

(5) Exceptionally strongly pilose larvae. – The larvae of Cordulegastridae and Neopetaliidae have their body richly furnished with long pale hair-like setae, which are present in abundance on all abdominal segments except on the last one and the anal pyramid, on the lateral parts of thorax and wing pads, and on the legs. Within the Cavilabiata this abundance of hair-like setae surpasses the one of all other Cavilabiata (including the Chlorogomphidae), and more generally it is not frequently encountered in other Odonata (present also in some Gomphidae and some Petaluridae).

(6), (7) Remarkable general similarity of the male vesica spermalis, with the following apomorphies (see also Pfau 2005): (6) V4 tongue very long, and (7) V4 posterior lobe bilobed, and rather well developed anterior lobe.

(8) Male tibial keel shortened. – Tibial keels are considered as belonging to the ground plan of Cavilabiata, or even possibly to that of Anisoptera since they are also present in Gomphidae. In *Neopetalia* the reduction is distinct, but not excessive, and the keels are still present in all legs, the reduction increasing toward the posterior legs. In Cordulegastridae the reduction affects also an anteroposterior gradient and the reduction is very strong. The keel is totally reduced in metathoracic legs, very short in mesothoracic legs (about $^1/_{10}$ to $^1/_9$ of the length of tibia) (at least present in the species of the *C. bidentata*-group, and *Anotogaster*), and rather short in the prothoracic legs (about $^1/_6$ to $^1/_5$ of the tibia length). The loss of the keel in the metathoracic legs and the reduction in the other legs can be explained by the fact that the unique arrangement of the autapomorphic peg-like setae (modified tumidotrichae) replaces the true tibial keels on meso- and metatibiae. At the base of the tibia the alignment of the peg-like setae is lateral, but after $^1/_4$ of its course, the homogenous

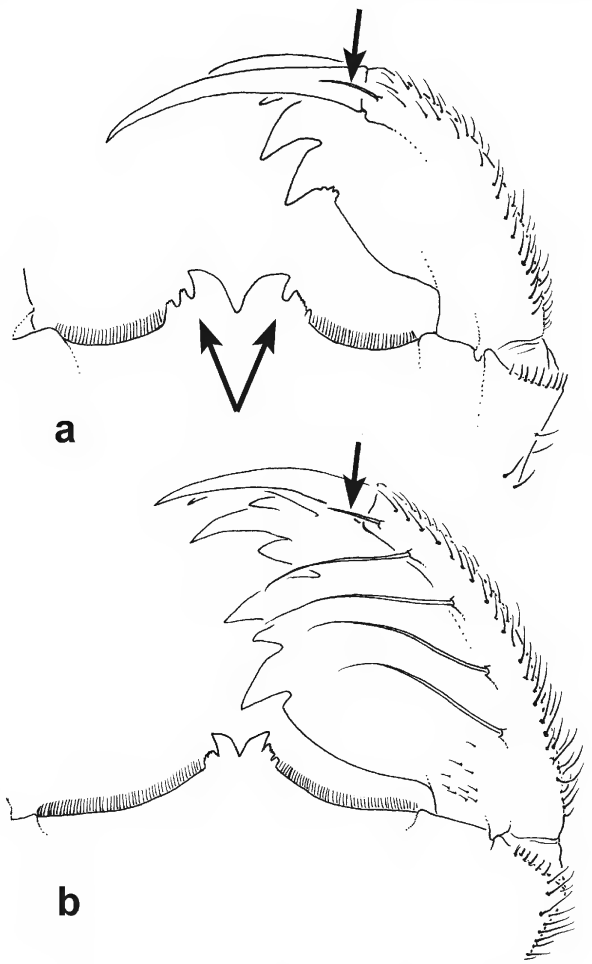


Fig. 12. Distal margin of prementum and right labial palp, dorsal view. – **a**. *Neopetalia punctata*. **b**. *Cordulegaster boltonii*. – The arrows indicate the unique shape of the distal margin of the prementum and the peculiar distal palpal seta.

alignment of setae is distinctly bent medially and replaces the tibial keel since it is occupying the same place and has the same height and width (formation of a plagiotibia). As such an arrangement is not present in females, the replacement of the true tibial keel by an analogous structure tends to be confirmed.

Beside these synapomorphies, it must be mentioned that the larvae of Cordulegastridae and Neopetaliidae are so strongly similar that it is difficult not to imagine a close relationship between these two families. It could be possible as well that *Neopetalia* is a 'true' Cordulegastridae, the adult being simply highly derived due to long isolation and regular reduction/expansion of the populations.

The following characters listed by Carle (1995) and Bechly (1996) are in favour of the paraphyly of Cordulegastroidea sensu nov.:

(1) Pterostigmata not parallel sided (distal side more oblique than basal side), and rather stout with length less than 8 times width.

(2) Anal loop at least elongated and enlarged, with more than five cells in the groundplan.

(3) Hindwing CuAa shortened, with fewer (1–6) posterior branches.

(4) Forewing nodus shifted distinctly distal to the middle of the wing.

(5) Adult compound eyes medio-dorsally even more approximated.

(6) Adult lateral clypeal lobes inflated.

(7) Adult intraocellar lobe with at least a small posterior inflation.

(8) Males with true tibial keels that have at least $^1/_3$ length of the protibiae and $^1/_5$ length of the meso- and metatibiae.

(9) Adult glossal processes ("paraglossal spines") obsolete.

(10) Metagonapophyses of female ovipositor further reduced.

All these characters are considered unconvincing because of the following reasons:

Character (1): The modern Chlorogomphidae have parallel sided pterostigmata. Neopetaliidae must be considered to have also 'parallel sided pterostigmata' (among the 20 checked wings of *Neopetalia*, 'not parallel sided pterostigmata' were observed on only two wings). Numerous Eurypalpida Bechly, 1996 have also parallel sided pterostigmata. This implies that this character possibly does neither belong to the ground plan of Carinitibiata Bechly, 1996 nor Brachystigmata Bechly, 1996, or that it is greatly homoplastic. Short pterostigmata is a highly homoplastic character, it is present in most of Zygoptera, Epiophlebiidae, Henrotayiidae, basal Stenophlebioptera like Liassostenophlebiidae or Prostenophlebiidae, Liassogomphidae, many Gomphidae, some Austropetaliidae and many Aeshnidae; it is reversed in some Libellulidae, furthermore some Cordulegastridae (*Neallogaster parvistigma*, *Anotogaster nipalensis*, *Cordulegaster diadema* among others) have rather short pterostigmata with the length less than 8 times width and not larger than those found in some Chlorogomphidae.

Character (2): More than five cells are very frequently found in the Cordulegastridae and some species like *C. maculata* or *C. diastatops* could have a rather large anal loop with frequently more than six cells, some specimens having even more than nine or ten cells. *Neopetalia*, exactly like most of Cordulegastridae, has rarely six cells in the anal loop and possesses generally only five cells, and even sometimes four cells. The character 'more than five cells in the anal loop' is not applicable for basal Carinitibiata.

Character (3) is extremely homoplastic within the Anisoptera and found in nearly all families, including the Cordulegastridae.

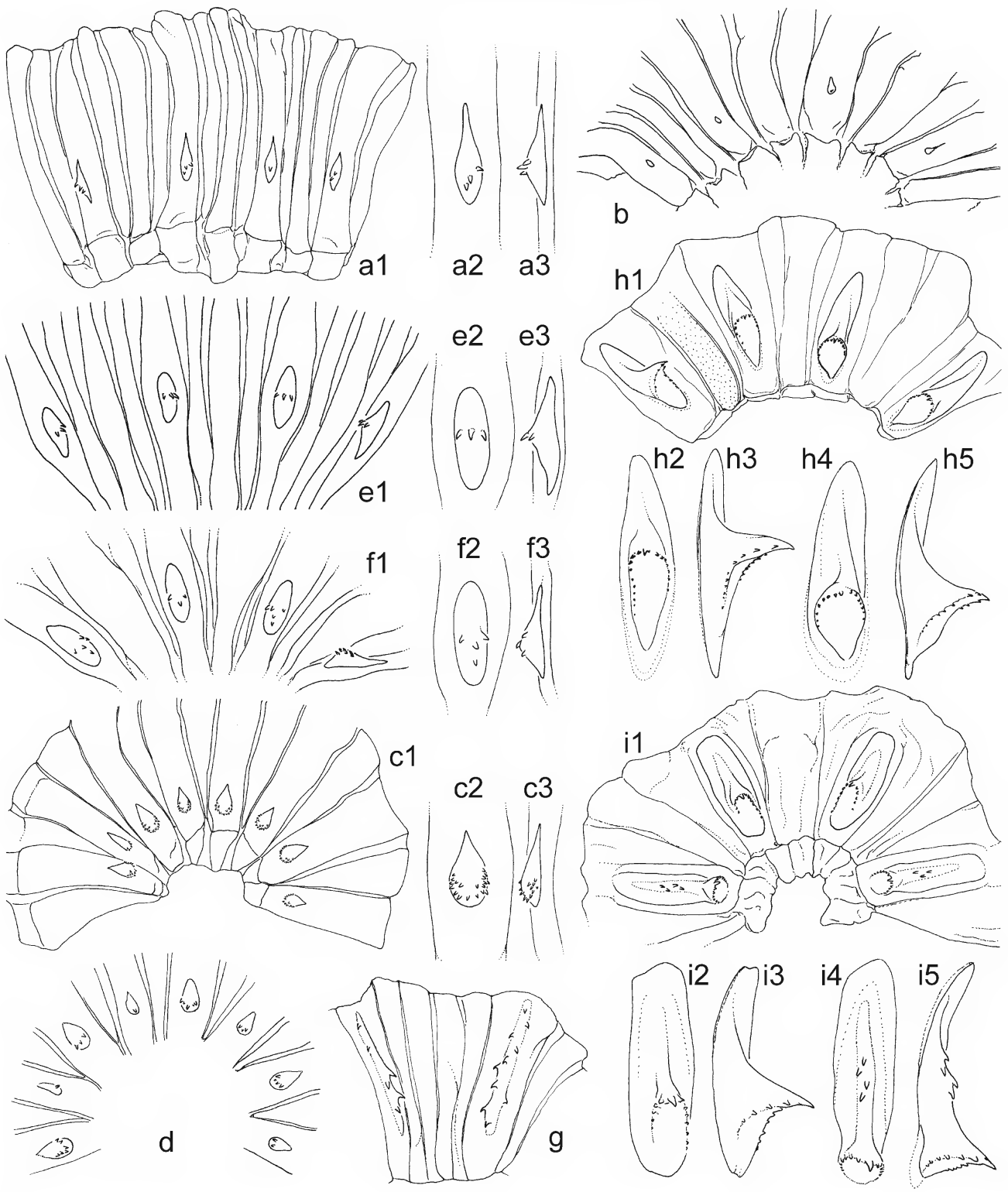


Fig. 13. Larval proventriculi, anterior side directed to the top (all proventriculi complete except g with two from four dental folds), detail of sclerotizations, view perpendicular to fold (a2, c2, e2, f2, h2, h4, i2, i4), same in lateral view (a3, c3, e3, f3, h3, h5, i3, i5), sclerotization of dorsal dental folds (h2, h3, i2, i3), sclerotization of ventral dental folds (h4, h5, i4, i5), lateral opening (h1), ventral opening (i1). – **a**. *Phenes* (coll. FLECK). **b**. *Phenes* (SMNS). **c**. *Tachopteryx* (F-1). **d**. *Tachopteryx* (F-3). **e**. *Archipetalia*. **f**. *Boyeria irene*. **g**. *Gomphus vulgatissimus*. **h**. *Neopetalia*. **i**. *Chlorogomphus risi*.

Character (4) is not applicable for the Carinitibiata since the nodus of *Neopetalia* and that of most Cordulegastridae is placed at the middle of the wing length or is slightly distally shifted. For the Cordulegastridae the character is apparently rather variable among individuals of a given species, and the nodus can appear sometimes well distally shifted.

Character (5) is useless to define the Carinitibiata and even the Brachystigmata since the approximation of the eyes is similar in *Neopetalia* and most of the Cordulegastridae, and since Chlorogomphidae have rather well separated eyes.

Character (6) is strongly subject to homoplasy. It is present in Cordulegastridae, even if less marked than that of Chlorogomphidae. In numerous Cavilabiata: Eurypalpida it reaches the same development as that found in Cordulegastridae, and it is distinctly weaker developed in numerous another ones, including most of the Libellulidae, some 'Corduliidae' like *Rialla*, *Idionyx*, *Austrocordulia*, etc., and at least the Gomphomacromiidae: *Archaeophya* and the Synthemistidae: *Synthemiopsis* and *Eusynthemis*. The character is also variable within Gomphidae (for example the inflation is rather well developed in *Onychogomphus forcipatus* and totally absent in *Davidius nanus*) and within Aeshnidae (well developed in *Oligoaeschna pryeri*, rather weakly developed in *Planaeschna milnei*).

Character (7): The Chlorogomphidae apparently do not have an intraocellar lobe, and only a rather well developed posterior inflation is visible which resembles that of some Gomphidae; in this case the vocabulary used by Carle (1995), "posterior inflation of the intraocellar lobe" versus "gomphid postocellar ridge", is maybe only a semantic artefact since the non-homology of these characters is not demonstrated. The intraocellar lobe of *Neopetalia* is distinctly less developed than that found in Cordulegastridae and could be considered as 'more primitive', representing a kind of intermediate stage between Chlorogomphidae and Cordulegastridae (thus an intraocellar lobe could have evolved three times independently).

Character (8): As already mentioned, this character is secondarily lost in Cordulegastridae. It is also secondarily lost in Libellulidae for which no atrophied keel is even recognizable (possible convergence with Petaluridae, Austropetaliidae and Aeshnidae), and lost or atrophied in one pair of legs of several other Eurypalpida like *Williamsonia*, some *Somatochlora*, *Hemicordulia*, *Idionyx*, *Cordulephya*, *Austrophya*, *Archaeophya*, etc. This proves that the character is also somewhat subject to homoplasy.

Character (9): Glossal processes are clearly present in *Chlorogomphus suzukii*, and more Chlorogomphidae must be checked to evaluate their importance within the family. The character is also homoplastic since it is present in Gomphidae, and variously expressed in Aeshnidae (for example, very distinct glossal processes are present in *Gynacantha japonica*, whereas they are absent in *Anax imperator*).

Character (10) is not receivable because erroneously stated and only applicable for the ground plan of Trichodopalpida Bechly, 1996. The great reduction of the Chlorogomphidae ovipositor is an independent event convergent to Gomphidae and the most derived Eurypalpida. The ovipositor of *Neopetalia*, even if somewhat modified, is strongly similar and homologous to that of Cordulegastridae, basal Gomphomacromiidae and Synthemistidae. The presence of a well visible apical remnant of V3 (sensu Pfau 1991) (and strongly developed V1 and V2) in *Synthemiopsis* (an Eurypalpida) tends to prove independent simplifications within Cavilabiata.

Chlorogomphidae

This family has the following plesiomorphies:

(1) Functional articulation of molar lobe of the left larval mandible (Fig. 17d–f) (unique plesiomorphy within Cavilabiata). – The molar lobe of the left mandible even if somewhat specialized, is rather similar to that of *Epiophlebia* with a strong tooth 'a', a well individualized tooth 'b' and five teeth 'm' (plesiotypic arrangement). This lobe is clearly moveable in all checked Chlorogomphidae. Moveable larval molar lobes are also plesiomorphically present in Epiophlebiidae (Fig. 17a, b), Gomphidae and most Zygoptera. The molar lobe of the right mandible of all Chlorogomphidae is unique and strongly transformed, with complete reduction of the 'm' teeth, the strong reduction of the 'b' tooth and with the tooth 'a' enormously developed and strongly bent toward exterior (Fig. 17c). This huge tooth with strong eccentricity is probably greatly submitted to tearing constraints during mastication; therefore, non-mobility and reinforcement of the tooth is a necessity to prevent distortions and possible damages, the molar lobe is consequently secondarily not articulated. The process of sclerification and loss of mobility of the right mandible is not homologous to that of higher Cavilabiata. Contrary to non-gomphid Anisoptera, the strongly modified chlorogomphid molar lobe of the right mandible is well individualized, and even if not moveable, the fusion with the rest of the mandible is not totally achieved since the limit of the lobe is very distinct with a very thin paler area still visible and the presence of a non-obliterated suture. This strongly suggests a recent event non-homologous to that of non-gomphid Anisoptera.

(2) Mandibles only moderately narrowed distally, similar to Epiophlebiidae and Gomphidae (Fig. 17a–d).

(3) Ventral dental folds of proventriculus with median elongated rasp-like dentition (Fig. 13i1, i4, i5) (unique plesiomorphy within Cavilabiata). – Homologous elongated rasp-like dentition is present in Epiophlebiidae, Gomphidae and in the ground plan of Zygoptera (see Fig. 13g).

(4) Sclerotized plate of the dental folds, especially the ventral ones, at least slightly more elongated than in other Cavilabiata (Fig. 13i). – Elongated sclerotized plates

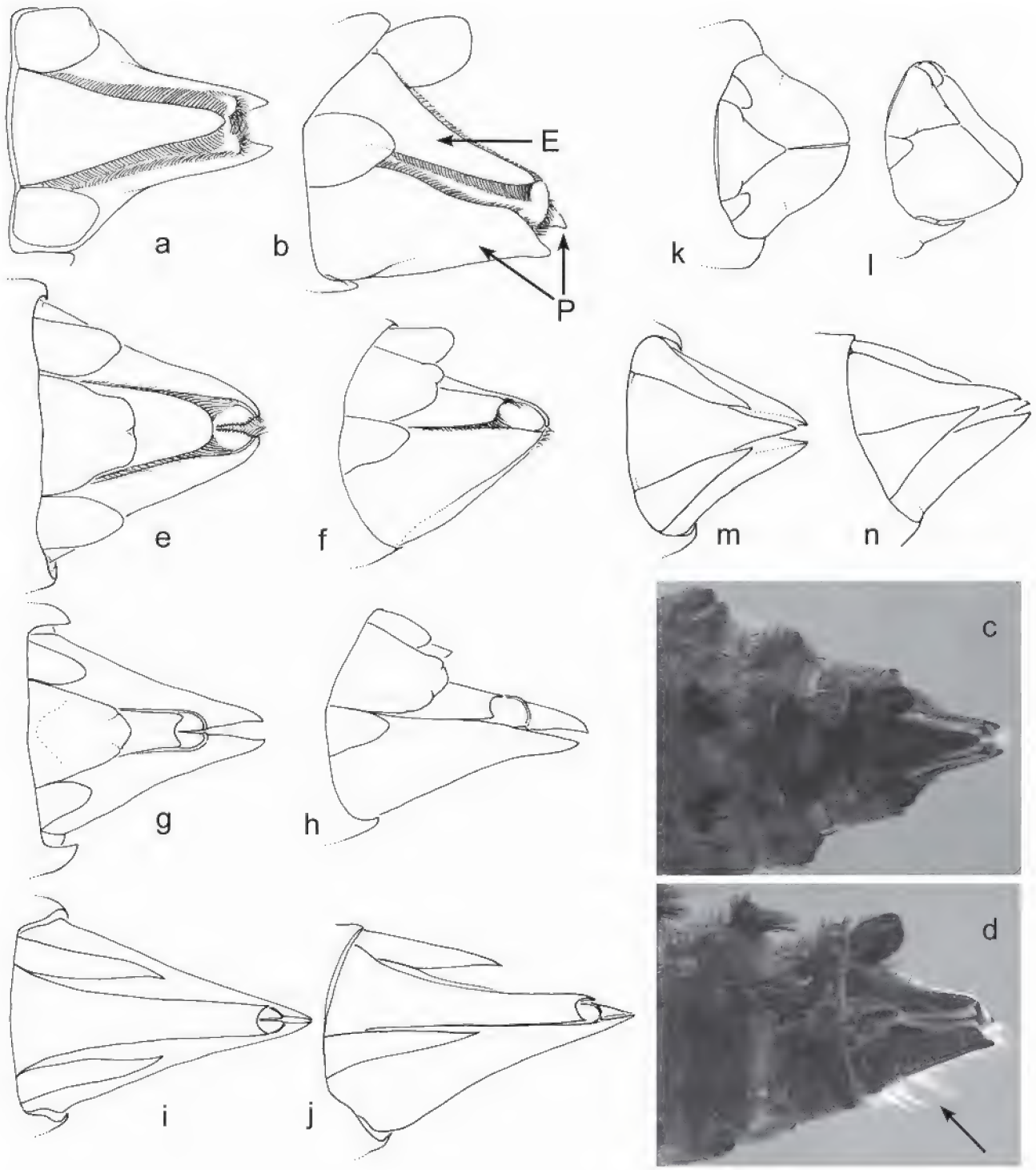


Fig. 14. Larval anal pyramids, dorsal (a, c, e, g, i, k, m) and dorso-lateral (b, d, f, h, j, l, n) views. – **a**–**d**. *Phenes*. **e**, **f**. *Tachopteryx*. **g**, **h**. *Phyllopetalia apicalis*. **i**, **j**. *Aeshna mixta*. **k**, **l**. *Epiophlebia superstes*. **m**, **n**. *Onychogomphus forcipatus*. – The arrow (d) indicates the ventral brush of hair-like setae. E = epiproct, P = paraprocts.

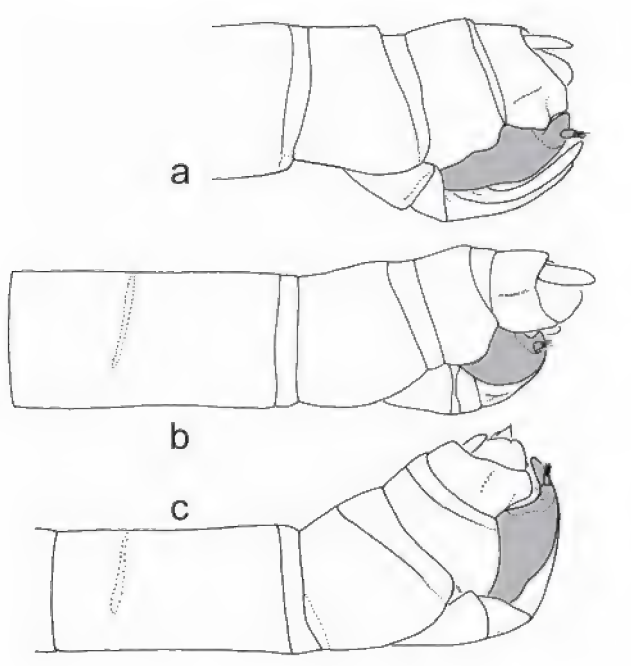


Fig. 15. Ovipositors (V3 grey coloured). – **a**. *Phenes* (modified from Garrison et al. 2006). **b**. *Tachopteryx*. **c**. *Uropetala chiltoni*.

wearing denticles are present in Epiophlebiidae, Gomphidae and in the ground plan of Zygoptera; they are independently shortened in Siphonoprocta taxon nov. (see below) and higher Libelluloidea.

(5) Gills of the plesiomorphic simplex type (contra Bechly 1996). – Organization very close to that found in *Neopetalia* and Cordulegastridae.

(6) Frons of adults in frontal view very transverse, rather low and only moderately bilobed, similar to that of Gomphidae, Petaluridae and Epiophlebiidae (unique within Cavilabiata).

(7) Adult with eyes distinctly more separated than other Cavilabiata (except the Libellulidae: *Diastatops* which clearly presents a reversion).

(8) No true intraocellar lobe (contra Carle 1995). – Like Gomphidae, the Chlorogomphidae possess a postocellar inflation close to lateral ocelli, but it cannot be considered as intraocellar lobe. The median ocellus is distinctly detached from the inflation and the inflation is not directly in contact with the lateral ocelli because they are separated by a furrow, furthermore the inflation takes place distinctly behind the lateral ocelli and not between them.

In the light of these plesiomorphies, any of them being unique within the Cavilabiata, the Chlorogomphidae must be considered occupying a very basal position. They should be considered as the sister group of all remaining Cavilabiata. Nevertheless, it cannot be ruled out that they possibly represent also the sister group of the Cordulegastroidea stat. nov., on the base of possible synapomorphies like (1) the presence of two strong divergent teeth on the distal margin of the prementum, (2) the strongly irregular dentition of the labial palps (unique within Epiproctophora), (3) similarities in the structures of the male vesica spermalis, etc. (Fleck in prep.).

Carle (1995) and Bechly (1996) place the Chlorogomphidae as sister group of the Eurypalpida Bechly, 1996, on the basis of following characters:

(1) Sectors of arculus approximate.

(2) Arculus rather straight and posterior part (crossvein) distinctly shorter than anterior part.

(3) Oblique pterostigmal brace indistinct or obsolete, if present shifted distally beneath the pterostigma.

(4) Wings with relatively short pterostigmata that cover only 1–3 complete cells.

(5) In the hindwing the so-called "gaff" (= basal CuA before its branching) strongly prolonged.

(6) In the hindwing CuAa further shortened with less than four posterior branches.

(7) Anal loop widened.

(8) Nodus shifted at least somewhat distally in forewing.

(9) Presence of several accessory cubito-anal crossveins.

(10) RP3/4 and MA parallel with only one row of cells even between the most distal parts of these veins.

(11) Males with characteristic derived type of peg-like setae (tumidotrichae) on meso- and metatibiae.

(12) Male tibial keels more than $^1/_3$ length of protibiae and more than $^1/_5$ length of meso- and metatibiae.

(13) Larval proventriculus with inner denticles of dorsal lobes directed medially.

(14) Larval rectal gills of the lamellate duplex type.

(15) Ligula of the male secondary genitalia without longitudinal keel.

These characters are considered unconvincing because of the reasons given below. Some works (among others: Fleck 2004, Fleck et al. 2008) have demonstrated that wing characters are much more subject to homoplasy than previously assumed. Furthermore I agree with Bechly (1996) himself indicating that "certain basal stem group representatives of Eurypalpida strongly suggest that the derived states of the anal loop, pterostigma and the arculus are convergences between Chlorogomphoidea and Eurypalpida".

Character (1) is a convergence, since the basal fossil Chlorogomphida-Mesochlorogomphidae (*Hispanochlorogomphus*, *Mesochlorogomphus*) and some basal Eurypalpida (*Araripelibellula*, *Rencordulia*, etc.) do not have more approximate sectors of the arculus than those of Cordulegastroidea stat. nov.

Character (2) is found in many Aeshnidae, numerous Gomphidae and some Stenophlebioptera, thus its phylogenetic importance is questionable. Its absence in the

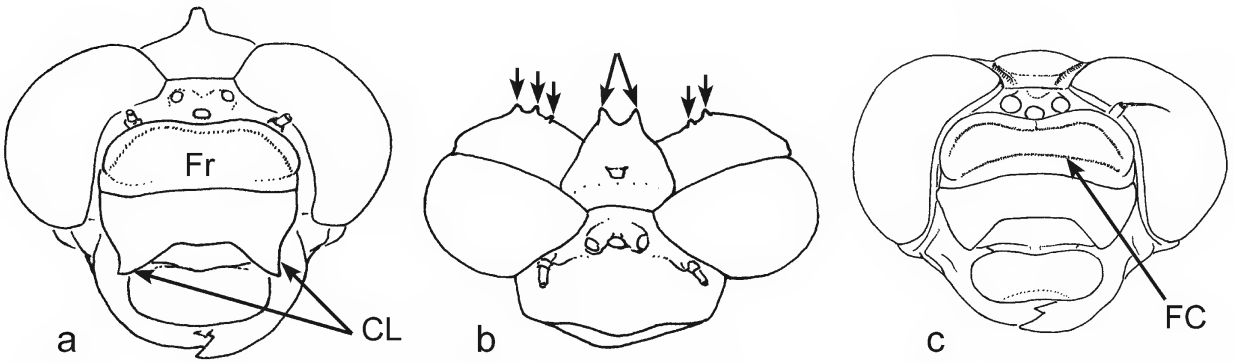


Fig. 16. Adult heads. – **a**, **b**. *Phenes* (modified from GARRISON et al. 2006), frontal (a) and dorsal (b) views. **c**. *Tanypteryx pryeri*, frontal view. – Arrows indicating the pair of occipital horns and the postocular spines. CL = clypeal lobes, FC = lower frontal carina, Fr = frons.

Hemeroscopidae and the Juralibellulidae Huang & Nel, 2007 and in some basal Eurypalpida like the fossil genus *Rencordulia* would moreover suggest a convergence between the Chlorogomphidae and other Brachystigmata.

Character (3) is highly homoplastic and useless since the brace vein is absent in Cordulegastridae, in some Isophlebioptera, in some Heterophlebioptera and in a few Aeschnidiidae, and present in some recent basal

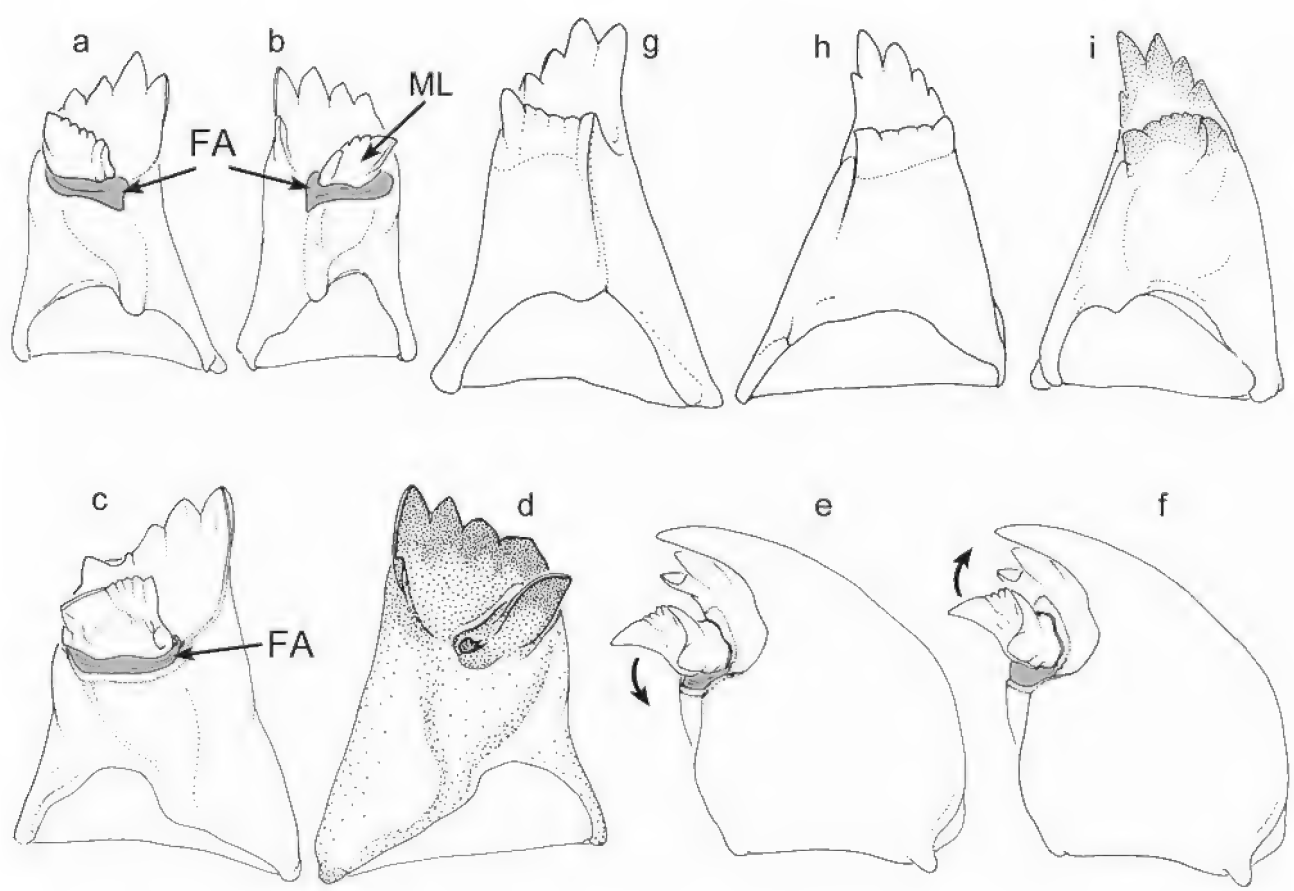


Fig. 17. Larval left (a, c, g) and right (b, d, e, f, h, i) mandibles, internal (a–d, g–i) and ventral (e, f) views. – **a**, **b**. *Epiophlebia superstes*. **c**–**f**. *Chlorogomphus risi*. **g**, **h**. *Phenes*. **i**. *Phyllopetalia* sp. – Flexible area coloured in grey. Arrows indicating the movements of the molar lobe. FA = flexible area, ML = molar lobe.

Chlorogomphidae, and in several more advanced Cavilabiata like the fossil family Araripelibellulidae, and the recent families Synthemistidae and Gomphomacromiidae s. str.

Character (4) is greatly homoplastic in the whole order. Short pterostigmata are found for example in most of the Zygoptera, Epiophlebiidae, numerous Aeshnidae and several Gomphidae. The length of the pterostigma is particularly variable within Cordulegastridae: short and covering about 2 or 3 cells in *C. brevistigma* and most of *C. erronea*, and covering 2½ to 4½ cells depending on the individual in most of the species (*C. bidentata*, *C. insignis*, *C. maculata*, *C. godmani*, *C. diadema*, *C. obliqua*, *C. dorsalis*, etc.). The pterostigmata of *Neopetalia* are not longer than those of several Chlorogomphidae, and are covering about 3 cells (between 2½ and 4 cells). Several large Chlorogomphidae have a rather long pterostigma covering more than 3 cells.

Character (5), visible in Chlorogomphida, is considered to be correlated with the independently evolved great enlargement of the anal loop and cubito-anal field of this group, which are variable within the clade Cavilabiata. The "gaff" of the most basal living Chlorogomphidae (having a rather small anal loop and not enlarged cubito-anal field) is not longer than the one of Neopetaliidae and Cordulegastridae. Some basal Brachystigmata, belonging to the fossil families Hemeroscopidae and Juralibellulidae, have also a rather short "gaff". The recent basal families Synthemistidae and Gomphomacromiidae have in their groundplan a shorter "gaff" than that of most Chlorogomphida, also strongly suggesting convergences of Chlorogomphida with Trichodopalpida Bechly, 1996, but also with Aeshnidae and fossil Aeschnidiidae.

Character (6) is not applicable since it is present also in Neopetaliidae and several Cordulegastridae. It is furthermore strongly subject to homoplasy within the Anisoptera since it is present in some modern Petaluridae, apparently most of the Austropetaliidae, several Aeshnidae and numerous Gomphidae, and reversed in a few females of large species of Chlorogomphidae.

Character (8), rather homoplastic and present in Chlorogomphidae, is probably a convergence with higher Cavilabiata, Aeshnidae: Gomphaeschninae and several Gomphidae. Its absence in several groups of Eurypalpida and Brachystigmata (like the fossil families Araripelibellulidae and Juralibellulidae) also strongly suggests convergences between Chlorogomphidae with higher Cavilabiata.

Character (9) is useless since it is absent in most of Cavilabiata and could be considered as a convergence between a few taxa within this clade.

Character (10) is clearly highly homoplastic and of little value. It is present in several Gomphidae and Aeshnidae, and reversed or primitively absent in some basal Eurypalpida like the fossil *Rencordulia*, most of the Synthemistidae, some Gomphomacromiidae, and some basal 'Corduliidae' like *Apocordulia*, *Austrocordulia*, *Lathrocordulia*, *Micromidia*, etc. Lastly, RP3/4 and MA are still slightly divergent in the basal Chlorogomphida: Mesochlorogomphidae, also strongly suggesting convergence between Chlorogomphidae and higher Cavilabiata.

Character (11) is not applicable since tumidotrichae are also present in Cordulegastridae. Since they are present in some Gomphidae, it is not impossible that tumidotrichae belong to the groundplan of Anisoptera, and are independently lost in several groups.

Character (12) is invalid since tibial keels are considered belonging to the groundplan of Cavilabiata, or even to the ground plan of Anisoptera.

Character (13) is considered by me as not founded because the inner denticles of the dorsal lobes of the proventriculus are apparently strictly similar in the studied specimens of Cordulegastridae, Neopetaliidae and Chlorogomphidae (see Fig. 13h, i).

Character (14) is, as already mentioned above, erroneous since Chlorogomphidae have simplex type of gills.

Character (15) is also present in Gomphidae and Neopetaliidae and strongly suggests correlation with atrophied ovipositors. This character is not really applicable to Eurypalpida since the ligula is strongly reduced in this group and with possibly different function.

Siphonoprocta **taxon nov.** (= Aeshnata + Petalurida, all sensu Bechly 1996)

Etymology: In reference to the larval anal pyramid transformed into a respiratory siphon.

The recent Petaluridae, and the recent sister groups Aeshnidae and Austropetaliidae (for synapomorphies of Aeshnidae and Austropetaliidae see Carle 1995 and Bechly 1996) are gathered in the clade Siphonoprocta on the basis of the following potential synapomorphies:

(1) Loss of the molar articulation of the larval mandible, convergent to Cavilabiata non-Chlorogomphidae. – A molar articulation is present in Epiophlebiidae, Gomphidae and Chlorogomphidae, and belongs to the ground plan of Anisoptera and Cavilabiata.

(2) Larval mandibles strongly narrowed distally and rather well curved with its ventral side, in internal view, distinctly concave (Fig. 17g, h, i). – The right mandible of Cordulegastridae and Neopetaliidae is also rather well narrowed distally and somewhat slightly curved, however not as strong as in Siphonoprocta, and represents a convergence.

(3) Dental folds of proventriculus with mound-like sclerotized lobe carrying in the ground plan a few denticles in the median part (Fig. 13a, d, e, f) (unique within Epiproctophora). – The dental folds of the Siphonoprocta are not homologous to those of Cavilabiata (contra Carle 1995). The mound-like sclerotization of Siphonoprocta is small and rounded, the entire sclerotized plate is bulged and has in its median part and slightly distally a few denticles (groundplan). This structure can be considered as

a strong contraction of the plesiomorphic elongated rasp-like sclerotized plate of the dental fold (Fig. 13g). The dental folds of Cavilabiata are strongly different, the sclerotized plate of a dental fold is very large and the huge tooth-like structure is placed on a large and relative plane plate (Fig. 13h, i). This plate presents only in it median part a longitudinal protuberance, low and only faintly marked anteriorly, it is growing posteriorly to give the well developed tooth-like structure. The strongly armed plates of the Cavilabiata can be considered as a lateral enlargement of the primitive thinner rasp-like sclerotization with a strong posterior specialization, this posterior part giving the tooth-like structure carrying aligned denticles along the posterior edges. The most primitive state of this structure is still encountered in the ventral dental folds of Chlorogomphidae (Fig. 13i1, i4, i5). – R e m a r k s : (a) The proventriculus of one larva of *Phenes* presents small lobes (Fig. 13b). As I already observed this phenomenon in one larva of *Archipetalia*, even if less atrophied, and as in the other larva the lobes are nearly identical to those found in most other Petaluridae, Austropetaliidae, and most Aeshnidae (Fig. 13a, d, e, f), it is probable that the small observed lobes are atypical. – (b) The autapomorphic dentition of the proventricular lobes of *Tachopteryx* is without doubt due to a secondary hyper-development since the antepenultimate instar larva presents lobes similar to other Petaluridae (Fig. 13d).

(4) Anal pyramid modified as a siphon (Fig. 14a–j) (unique within Epiproctophora, secondarily reversed in some lotic Aeshnidae; primitively the anal pyramid is not siphon-like, see Fig. 14k–n). The siphon is formed by the gutter-shaped epiproct and elongate paraprocts with an inner siphon carina that anteriorly exactly corresponds to the lateral margin of the epiproct (contra Carle 1995, considering the terminalia forming a dorsally directed vent as an autapomorphy of the Pelaluridae). These lateral margins of the epiproct are furnished with a dense row of setae in Petaluridae, possibly a primitive condition, since distinct rows of setae are still visible in Austropetaliidae. This structure is functional for the direct air capture at the water surface or for an amphibian life.

(5) Terminalia with ventro-medial hair brush (Fig. 14d) (contra Carle 1995). I consider this structure as a possible synapomorphy of the Siphonoprocta, since it is not only present in Petaluridae, but also present in *Archipetalia*, *Austropetalia*, and as a less developed structure in all other Austropetaliidae.

(6) Styli of ovipositor brush-like, carrying a terminal dense tuft of long and sub-parallel setae (apparently unique within Odonata). The Zygoptera and the Epiophlebioptera have styli not brush-like.

Additional putative synapomorphies:

(7) Tibiae of adult male with complete loss of tibial keel (convergent to Libellulidae). – This character is until now not polarisable because of its absence in the recent outgroups and the unsolved position of the Gomphidae. Tibial keels are possibly in the ground plan of the Anisoptera, but the validity of this character depends on its knowledge in outgroup fossil taxa like Stenophlebioptera and basal fossil Anisoptera like Juragomphidae or Liassogomphidae, and also of the definitive position of the Gomphidae.

(8) Frons of adults with a large transverse carina between dorsal margin of the frons and clypeus, delimiting a kind of depression between it and the dorsal edge of the frons. – If this character is a reversion in *Phenes*, it could be a synapomorphy of the Siphonoprocta because it is present in non-Pheninae Petaluridae, Austropetaliidae – even if less marked – and several Aeshnidae – also less marked.

(9) Larval abdomen with hairy dorso-lateral tubercles ('Zottenhöcker') in the ground plan. – This character is present and well expressed in *Phenes*. It probably also belongs to the ground plan of Austropetaliidae (distinct 'Zottenhöcker' are present in *Archipetalia*, and smaller ones in *Austropetalia* and most *Phyllopetalia*). Lastly, small 'Zottenhöcker' are also visible in a few Aeshnidae like *Telephlebia* (atavism?).

4.2.4 Conclusion

The position of the Gomphidae is not resolved in the present study because of many conflicting characters. The presence of the unique rasp-like larval proventricular dentition and other putative plesiomorphies suggest that the Gomphidae could be the sister group of all remaining Anisoptera. Alternatively, the presence of tibial keels of the male and a part of characters presented by Bechly (1996) suggest that the Gomphidae could be the sister group of Cavilabiata. Lastly, it is not impossible that the Gomphidae represent the sister group of the Siphonoprocta if on the one hand the presence in the ground plan of lateral abdominal protuberances anterior to the segment 7 and on the other hand complete fusion of the larval abdominal sternite 9 with the post-pleurite correlated to a perseverance of the pre-pleurite are accepted as possible synapomorphies. The work of Fleck et al. (2008) supports this last hypothesis and the monophyly of the Siphonoprocta. Their results and those of Carle et al. (2008) and Bybee et al. (2008) support also the Chlorogomphidae as not belonging to the Brachystigmata.

5 References

Asahina, S. & Okumura, T. (1949): The nymph of *Tanypteryx pryeri* Selys (Odonata, Petaluridae). – Mushi **19** (7): 37–38.

Bechly, G. (1996): Morphologische Untersuchungen am Flügelgeäder der rezenten Libellen und deren Stammgruppenvertreter (Insecta; Pterygota; Odonata), unter besonderer

Berücksichtigung der Phylogenetischen Systematik und des Grundplanes der *Odonata. – Petalura, special volume **2**: 402 pp.

Bybee, S., Ogden, H., Branhama, M. & Whiting, M. (2008): Molecules, morphology and fossils: a comprehensive approach to odonate phylogeny and the evolution of the odonate wing. – Cladistics **23**: 1–38.

Carle, F. L. (1995): Evolution, taxonomy, and biogeography of ancient Gondwanian Libelluloids, with comments on anisopterid evolution and phylogenetic systematics (Anisoptera: Libelluloidea). – Odonatologica **24**: 383–424.

Dumont, H., Vierstraete, A. & Vanfleteren, J. (2010): A molecular phylogeny of the Odonata (Insecta). – Systematic Entomology **35**: 6–18.

Fleck, G. (2004): La larve du genre *Cyanothemis* (Ris, 1915) (Odonata: Anisoptera: Libellulidae). Conséquences phylogénétiques. – Annales de la Société entomologique de France **40**: 51–58.

Fleck, G., Ullrich, B., Brenk, M., Wallnisch, C., Orland, M., Bleidissel, S. & Misof, B. (2008): A phylogeny of anisopterous dragonflies (Insecta, Odonata) using mtRNA genes and mixed nucleotide/doublet models. – Journal of zoological Systematics and evolutionary Research **46**: 310–322.

Fraser, F. C. (1933): A revision of the Fissilabioidea (Cordulegastridae, Petaliidae, and Petaluridae) (Order Odonata). Part II. Petaliidae and Petaluridae and appendix to part. I. – Memoirs of the Indian Museum **9**: 205–260.

Fraser, F. C. (1957): A reclassification of the order Odonata, 134 pp.; Sydney (Royal zoological Society of New South Wales).

Garrison, R. W., Ellenrieder, N. & Louton, J. A. (2006): Dragonfly genera of the New World, 368 pp.; Baltimore (John Hopkins University press).

Heidemann, H. & Seidenbusch, R. (1993): Die Libellenlarven Deutschlands und Frankreichs. Handbuch für Exuviensammler, 391 pp.; Keltern (Erna Bauer).

Legrand, J. & Fleck, G. (2005): La larve de *Tragogomphus tenaculatus* (Fraser, 1926) (Odonata, Anisoptera, Gomphidae). – Revue française d'Entomologie (Nouvelle Série) **27**: 73–76.

Lohmann, H. (1996): Das Phylogenetische System der Anisoptera (Odonata). – Entomologische Zeitschrift **106**: 209–252.

Needham, J. & Bullock, D. (1943): The Odonata of Chile. – Zoological Series of the Field Museum of natural History, Chicago **24** (32): 357–373.

Nel, A., Bechly, G., Jarzembowski, E. & Martínez-Delclòs, X. (1998): A revision of the fossil petalurid dragonflies (Insecta: Odonata: Anisoptera: Petalurida). – Paleontologia Lombarda (Nuova Serie) **10**: 1–68.

Petrulevicius, J. F. & Nel, A. (2003): Oldest petalurid dragonfly (Insecta: Odonata): a Lower Cretaceous specimen from south Patagonia, Argentina. – Cretaceous Research **24**: 31–34.

Pfau, H. K. (1991): Contributions of functional morphology to the phylogenetic systematics of Odonata. – Advances in Odonatology **5**: 109–141.

Pfau, H. K. (2005): Structure, function and evolution of the 'glans' of the anisopteran vesica spermalis (Odonata). – International Journal of Odonatology **8**: 259–310.

Rehn, A. (2003): Phylogenetic analysis of higher-level relationships of Odonata. – Systematic Entomology **28**: 181–239.

Riek, E. F. & Kukalova-Peck, J. (1984): A new interpretation of dragonfly wing venation based upon early Carboniferous fossils from Argentina (Insecta: Odonatoidea) and basic character states in pterygote wings. – Canadian Journal of Zoology **62**: 1150–1166.

Rowe, R. J. (1987): The dragonflies of New Zealand, 260 pp.; Auckland (Auckland University Press).

Sugimura, M., Ishida, S., Kojima, K., Ishida, K. & Aoki, T. (2001): Dragonflies of the Japanese archipelago in colour, 641 pp.; Sapporo (Hokkaido University Press).

Tillyard, R. J. (1921): Description of a new dragonfly belonging to the genus *Uropetala* Selys. – Transactions and Proceedings of the New Zealand Institute **53**: 343–346.

Watson, M. C. (1956): The utilization of mandibular armature in taxonomic studies of anisopterous nymphs. – Transactions of the American entomological Society **81**: 155–205.

Winstanley, W. J. (1981): An emergence study on *Uropetala carovei carovei* (Odonata: Petaluridae) near Wellington, New Zealand, with notes on the behaviour of the subspecies. – Tuatara **25**: 21–36.

Wolfe, L. S. (1953): A study of the genus *Uropetala* Selys (Order Odonata) from New Zealand. – Transaction of the Royal Society of New Zealand **80**: 245–275.

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Systematic revision of the spider wasp genus *Sphictostethus* Kohl (Hymenoptera: Pompilidae: Pepsinae) in Australia with description of nine new species

Lars Krogmann & Andrew D. Austin

Abstract

The Australian members of the genus *Sphictostethus* Kohl, 1884 are revised. Previously this genus was only known to occur in Australia from two species, both restricted to Tasmania. Here we recognize 13 species from the continent. Nine species are described as new, viz. *S. dorrigoensis*, *S. gadali*, *S. geevestoni*, *S. haoae*, *S. insularis*, *S. montanus*, *S. picadillycircus*, *S. walteri*, and *S. yidyam* **n. spp.** Two species are here transferred to the genus, *S. infandus* (Smith) **n. comb.** and *S. connectens* (Turner) **n. comb.**, while *S. aliciae* (Turner) and *S. xanthochrous* (Turner) are redescribed. Australian *Sphictostethus* species are distributed throughout the tropical and temperate wet forests along the east coast of the mainland and also show a significant radiation in the cool temperate forests of Tasmania, where six species are recorded. *Sphictostethus insularis* **n. sp.** is described from Lord Howe Island, where it is apparently endemic and represents only the second described pompilid species from this small and isolated volcanic landmass. The distribution of the genus *Sphictostethus* and its putative Gondwanan origin are briefly discussed with reference to the new findings.

Keywords: Systematics, *Sphictostethus*, new species, Australia, Tasmania, Lord Howe Island, Gondwanan distribution.

Zusammenfassung

Die australischen Vertreter der Gattung *Sphictostethus* Kohl, 1884 werden revidiert. Bislang war diese Gattung in Australien nur von zwei Arten bekannt, die beide ausschließlich auf Tasmanien vorkommen. In dieser Arbeit weisen wir 13 Arten auf dem Kontinent nach. Neun neue Arten werden beschrieben: *S. dorrigoensis*, *S. gadali*, *S. geevestoni*, *S. haoae*, *S. insularis*, *S. montanus*, *S. picadillycircus*, *S. walteri* und *S. yidyam* **n. spp.** Zwei Arten, *S. infandus* (Smith) **n. comb.** und *S. connectens* (Turner) **n. comb.**, werden in die Gattung überführt und zusammen mit *S. aliciae* (Turner) und *S. xanthochrous* (Turner) wiederbeschrieben. Die australischen *Sphictostethus*-Arten sind in den tropischen und gemäßigten Feuchtwäldern entlang der Ostküste Australiens verbreitet und weisen zudem eine große Artenvielfalt in den kühl-temperierten Wäldern Tasmaniens auf, wo wir insgesamt sechs Arten nachweisen konnten. *Sphictostethus insularis* **n. sp.** wird von Lord Howe Island beschrieben. Diese Art ist hier wahrscheinlich endemisch und stellt erst die zweite beschriebene Pompilide von dieser kleinen, isolierten Vulkaninsel dar. Basierend auf den neuen Ergebnissen werden die Verbreitung der Gattung *Sphictostethus* und ihr möglicher Gondwana-Ursprung kurz diskutiert.

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1 Introduction

The spider wasp genus *Sphictostethus* Kohl, 1884 has a restricted southern hemisphere distribution and is known from the Neotropics (Chile and Argentina), New Zealand and Australia (Harris 1987, Roig-Alsina 1987, Elliott 2007). It was considered a subgenus of *Priocnemis* by Townes (1957), but Harris (1987) in his treatment of the New Zealand Pompilidae resurrected *Sphictostethus* as a genus. Harris (1987) recognized three species from New Zealand and transferred two Tasmanian species to *Sphictostethus*, thus recognizing the genus from Australia for the first time. No biological data is available for Australian *Sphictostethus*, but Harris (1987) provides detailed information on the biology of the three species from New Zealand, *S. calvus*, *S. fugax*, and *S. nitidus*. These species take their spider hosts to natural cavities (e. g. in trees or rotten logs) or under stones and construct single-celled or multicelled nests (Harris 1987). Here we revise the Australian members of *Sphictostethus* and recognize 13 species from the continent. Nine species are described as new and two previously described species are transferred to the genus. We document and discuss the distribution of *Sphictostethus* in Australia and provide an identification key that covers both sexes. Male genitalic structures are described in detail for all Australian species and its usefulness as tool for pompilid systematics is discussed.

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2 Material and Methods

Terms for morphological structures follow Day (1988), Harris (1987) and Goulet & Huber (1993). Images of the specimens were taken with a Leica DXM 1200 digital camera attached to a Leica MZ 16 APO microscope and processed using Auto-Montage (Syncroscopy) software. Images of male genitalia and subgenital plates were done under a Keyence VHX 600 digital microscope. All images were edited with Adobe Photoshop CS3 and figure plates assembled with Adobe Illustrator CS3. The species descriptions are based on all available specimens and represent the known morphological variation of each species. Females are described in greater detail, while the descriptions of males focus on the differences between the sexes.

Specimens were borrowed from and/or are deposited in the following collections (acronyms used throughout the text):

AM	Australian Museum, Sydney, Australia
ANIC	Australian National Insect Collection, CSIRO, Canberra, Australia
BMNH	The Natural History Museum, London, United Kingdom
BPBM	Bernice P. Bishop Museum, Honolulu, Hawaii, U.S.A.
QDPIF	Queensland Department of Primary Industries and Fisheries Collection, Indooroopilly, Australia
QM	Queensland Museum, Brisbane, Australia
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany
UQIC	University of Queensland Insect Collection, Brisbane, Australia
WINC	Waite Insect and Nematode Collection, University of Adelaide, Australia
ZMHB	Museum für Naturkunde, Humboldt-Universität Berlin, Germany

The following abbreviations for frequently used morphological terms are used throughout the text:

S	metasomal sternite (for example S1 is the first metasomal sternite)
T	metasomal tergite (for example T1 is the first metasomal tergite)

3 Generic diagnosis of *Sphictostethus*

Genus *Sphictostethus* Kohl, 1884.

Sphictostethus Kohl, 1884: 37, 47. Type-species: *Pompilus gravesii* Curtis in Haliday 1837 by original designation.

Haploneura Kohl, 1884: 37, 47. Type species: *Haploneura apogona* Kohl, 1884 by original designation [preoccupied Loew, 1850; synonymy by Townes 1957: 81].

Haploneurion Kohl, 1884: 163 [nom. nov. for *Haploneura* Kohl, 1884].

Sphictonotus: Bertkau 1885: 169 [lapsus calami for *Sphictostethus* Kohl, 1884].

Chrysocurgus Haupt, 1937: 134. Type species: *Sphex nitida* Fabricius, 1775 by original designation [placed as synonym of *Chirodamus* by Townes 1957: 11, generic transfer by Harris 1987: 63].

Anapriocnemis Haupt, 1959: 25–26, 60. Type species: *Pompilus flavipes* Guérin-Méneville, 1836 by original designation [synonymy by Evans 1973: 214–215].

Specimens with three submarginal cells and vein M always reaching the outer wing margin, at least as spectral vein (Fig. 1A). Lateral mesopleuron often distinctly produced laterally (sometimes only in males) (Fig. 1E). Hind tibiae in females nearly always with toothed scales, at least indicated in proximal half (Fig. 1C). Metasoma in males (usually also in females) tubularly petiolate (Fig. 1A).

4 Key to the Australian species of *Sphictostethus*

This key is based on all available material of *Sphictostethus* and covers all known Australian species. The key works best for females, which can be easily identified without genital dissections. Males of *Sphictostethus* are more difficult to identify as they show less distinct differences and a higher level of morphological variation. For the identification of males, genital dissections are necessary and so the key is based on differences in the subgenital plate and male genitalic structures. Males of four species are unknown and not covered by the key (*S. connectens*, *S. dorrigoensis*, *S. picadillycircus* and *S. xanthochrous*).

1 Antenna 12-segmented; metasoma with six visible tergites [females]. **2**
– Antenna 13-segmented; metasoma with seven visible tergites [males]. **14**
2 Foretibia without distinctly elongate apical spine (Fig. 1F). **3**
– Foretibia with distinctly elongate apical spine (Fig. 1G). **12**
3 Brachypterous species; metapostnotum enlarged, more than 3 times as long as metascutellum (Fig. 1H). ..... ***S. walteri* n. sp.**
– Macropterous species; metapostnotum much less enlarged relative to metascutellum, always less than twice as long as metascutellum (Fig. 1E). **4**
4 Propodeum with distinct posterolateral tubercles (Fig. 1E). **5**
– Propodeum without posterolateral tubercles. **6**
5 Large species, body length more than 20 mm; forewing orange without dark infuscations; body bicoloured, with distinct black/orange colouration (Fig. 3G). ..... ***S. infandus* (Smith) n. comb.**
– Smaller species, body length less than 15 mm; forewing whitish, with three dark bands of infuscation (Fig. 1A); body colouration more or less uniform, black to dark purple. ..... ***S. yidyam* n. sp.**
6 Mesosoma light orange-brown to red-brown. **7**
– Mesosoma dark brown to black. **8**
7 Large species, body length ~15 mm; head dorsally produced (Fig. 1L); first metasomal segment orange, contrasting with brown of the remaining metasoma (Fig. 3D). ..... ***S. dorrigoensis* n. sp.**
– Smaller species, body length ~10 mm; head dorsally not produced (Fig. 2I); first metasomal segment brown, like the remaining metasoma (Fig. 3E). ..... ***S. montanus* n. sp.**
8 Forewing hyaline, without infuscation; head, antennae and body uniformly dark brown (Fig. 4E). ..... ***S. insularis* n. sp.**
– Forewing orange or hyaline, always with distinct bands of infuscation (Fig. 3B, C); body colouration different. **9**
9 Forewing hyaline (Fig. 3B); ventral clypeal margin straight, not incised medially (Fig. 2A). ..... ***S. geevestoni* n. sp.**
– Forewing light orange to orange; clypeal margin at least slightly incised medially. **10**
10 Metasoma black with broad orange band along posterior half of first metasomal segment and most of second metasomal segment (Fig. 3A); hind tibia with distinct toothed scales (Fig. 1B). ..... ***S. aliciae* (Turner)**
– Metasoma dark brown to black, without broad orange band across first and second metasomal segments; hind tibia with inconspicuous toothed scales. **11**
11 Antennae uniformly dark brown (Fig. 3C); clypeus uniformly dark brown to black (Fig. 2P); metapostnotum without median sulcus. ..... ***S. xanthochrous* (Turner)**
– Antennae uniformly orange (Fig. 3H); ventral margin of clypeus distinctly orange (Fig. 1K), extent of clypeus colouration varies from less than half to three-quarters height of clypeus; metapostnotum with median sulcus. ..... ***S. connectens* (Turner) n. comb.**
12 Ventral clypeal margin deeply but narrowly incised medially, lateral corners with distinct edges (Fig. 2C); forewing without greyish apical wing margin (Fig. 4A); hind tibia without toothed scales. ..... ***S. haoae* n. sp.**
– Ventral clypeal margin otherwise, i. e. either slightly and narrowly incised medially or broadly incised; forewing with greyish apical wing margin (Fig. 4C); hind tibia with toothed scales at least indicated in proximal half (Fig. 1C). **13**
13 Ventral clypeal margin slightly incised medially (Fig. 1M). ..... ***S. gadali* n. sp.**
– Ventral margin deeply and broadly incised medially (Fig. 2K). ..... ***S. picadillycircus* n. sp.**
14 Subgenital plate broad, with distinctly elongate setae, tubercles present submedially, tip blunt, slightly incised medially (Fig. 6I). ..... ***S. walteri* n. sp.**
– Subgenital plate much narrower and tip always rounded apically, setae less elongate, tubercles absent or positioned laterally (Fig. 6A–H). **15**
15 Subgenital plate with distinct lateral tubercles for articulation of S6 (Fig. 6E–H). **16**
– Subgenital plate without distinct lateral tubercles (Fig. 6A–D). **19**
16 Lateral tubercles on subgenital plate slightly extended and distinctly pointed (Fig. 6H). ..... ***S. infandus* (Smith) n. comb.**
– Lateral tubercles on subgenital plate compressed, not extended and not pointed (Fig. 6E–G). **17**
17 Male genitalia with paramere broad and flap-like, setation on paramere restricted to outer margins (Fig. 7E). ..... ***S. montanus* n. sp.**
– Male genitalia with paramere only slightly broadened, setation not restricted to outer margins (Fig. 7F, G). **18**
18 Paramere medially slightly broadened and with distinct peglike setae, distal portion of paramere with normal setation (Fig. 7F). ..... ***S. aliciae* (Turner)**
– Paramere slightly broadened throughout whole length, with long and normal setation (Fig. 7G). ..... ***S. insularis* n. sp.**
19 Male genitalia with digiti volsellares medially extended and adjacent to each other, apical portions bent inwards (Fig. 7D). ..... ***S. yidyam* n. sp.**
– Male genitalia with digiti volsellares straight (Fig. 7A–C). **20**
20 Male genitalia with lamina volsellaris having one large and blunt distal hook, proximal hook absent, parameres uniformly setose (Fig. 7C). ..... ***S. gadali* n. sp.**
– Male genitalia with lamina volsellaris having two hooks, parameres medially with reduced setation (Fig. 7A, B). **21**
21 Male genitalia with aedeagus much shorter than parapenial lobe and digitus volsellaris, the latter slightly longer than parapenial lobe (Fig. 7A). ..... ***S. geevestoni* n. sp.**
– Male genitalia with aedeagus about the same height as parapenial lobe, digitus volsellaris distinctly longer than aedeagus and parapenial lobe (Fig. 7B). ..... ***S. haoae* n. sp.**

5 The Australian species of *Sphictostethus*

5.1 *Sphictostethus aliciae* (Turner, 1914) (Figs. 1B, I, J; 3A; 5A; 6F; 7F)

Calopompilus aliciae Turner, 1914: 617.
Priocnemis aliciae: Turner 1915b: 334 [generic transfer].
Sphictostethus aliciae: Harris 1987: 64 [generic transfer]; Elliott 2007 [cat.].

Holotype ♀, Australia, South Tasmania, Mount Wellington, 1300–2300 ft, 15.I.–6.II.1913, R. E. Turner (BMNH). – Other specimens examined: 1 ♀, 1 ♂, same data as holotype (BMNH); 1 ♀, Australia, Tasmania, Lake St. Clair, 26.I.1949, E. F. Riek (ANIC); 1 ♀, Australia, Tasmania, 7 km Southwest by West of Derwent Bridge, 42°10'S 146°10'E, Malaise/ethanol, 16.I.–2.II.1983, I. D. Naumann & J. C. Cardale (SMNS); 2 ♀♀, Australia, Tasmania, 9 km West-Southwest of Derwent Bridge, 42°10'S 146°08'E, ex yellow tray, 21.I.1983, I. D. Naumann & J. C. Cardale (ANIC, WINC); 1 ♂, Australia, Tasmania, 14 km South of Bronte Park, 42°15'S 146°29'E, Malaise/ethanol, 15.I.–3.II.1983, I. D. Naumann & J. C. Cardale (ANIC); 1 ♀, Australia, Tasmania, Mount Barrow, 41°22'S 147°25'E, 1000 m, 23.I.1992, G. & A. Daniels (UQIC Reg. no. 91448); 1 ♂, Australia, Tasmania, Meredith Road, 12 miles from Corinna, 6.I.1954, T. G. Campbell (ANIC); 1 ♂, Australia, Tasmania, Barrow Creek, 8 km Northeast of Nunamara, 41°21'S 147°22'E, Malaise trap, 12.I.–6.II.1983, I. D. Naumann & J. C. Cardale (SMNS).

Diagnosis: Forewing yellowish with two brown bands of infuscation and greyish apical wing margin; metasoma with broad orange band along posterior half of first metasomal segment and most of second metasomal segment (Figs. 3A; 5A). Foretibia in female without elongate apical spine. Hind tibia in female with distinct toothed scales (Fig. 1B). Male parameres with peg-like setae (Fig. 7F).

Description, female (Fig. 3A): Body length: 10.47–11.23 mm, head plus mesosoma: 4.88–5.37 mm. Colour: Head, mesosoma and coxae black, antennae dark brown to black, legs (apart from coxae) orange, metasoma black with orange band along posterior half of first metasomal segment and most of second metasomal segment. Head (Fig. 1I): Head sculpture finely punctuate, with dense white setation. One row of elongate setae present along upper inner eye margin. Inner eye margin slightly incised medially, eye 1.90–2.26 times as long as wide. Malar space absent. Clypeus 2.63–2.79 times as wide as high, with dense white setation and irregular row of elongate setae near ventral margin, setae arising from distinct punctures; ventral clypeal margin incised medially. First flagellomere 4.0–4.86 times as long as wide and 1.12–1.22 times as long as second flagellomere. Mesosoma: Pronotum very short, posterior margin deeply incised, surface finely punctuate. Mesonotum finely punctuate, mesoscutum with parapsidal sulcus, parascutal carina not raised. Mesoscutellum with medially distinct scutoscutellar sulcus. Mesopleuron ventrolaterally not distinctly produced. Metanotum relatively long, with distinct but not raised metascutellum. Metapostnotum medially constricted, median length about 0.67–0.70 times as long as metascutellum, dorsal surface with distinct transverse striae, median sulcus indicated posteriorly. Propodeum very high, apically rounded, with distinct declivity, propodeal spiracles elongate but narrow, without raised margin; propodeal surface finely reticulate without transverse rugae. Wings: Macropterous, forewing yellowish, with two brown bands of infuscation and greyish apical wing margin, distal brown band covering SMC2 and SMC3 completely. SMC3 longer and distinctly higher than SMC2. Terminal abscissa of vein M reaches wing margin as hardly visible, relict spectral vein. Legs: Tarsal claws pectinate, elongate, not strongly curved, with ventral tooth that is slightly shorter than claw. Tarsal plantulae present. Foretibia without elongate apical spine. Hind tibia with distinct toothed scales. Metasoma: T1 not distinctly petiolate anteriorly, metasomal terga with fine reticulation and dense short setation. S2 with shallow transverse groove. Apex of metasoma with long setae.

Description, male (Fig. 5A): Body length: 4.31–5.61 mm, head plus mesosoma: 2.40–3.05 mm. Colour as in female. Head (Fig. 1J): Eye 2.11–2.16 times as long as wide. Clypeus 2.75–2.83 times as wide as high, without row of elongate setae near ventral margin. First flagellomere 2.47–2.82 times as long as wide and 0.89–0.93 times as long as second flagellomere. Mesosoma: Mesopleuron slightly produced posterolaterally. Metapostnotum 0.80–1.08 times as long as metascutellum. Propodeum dorsally less rounded than in female. Metasoma: Subgenital plate (Fig. 6F) with broad base and compressed lateral tubercle for insertion with S6; apically with short dense setation, tip broadly rounded. Male genitalia (Fig. 7F) with aedeagus apically narrowed, slightly shorter than parapenial lobe and digitus volsellaris. Digitus volsellaris about as long as parapenial lobe. Lamina volsellaris with two hooks, which are about the same size. Paramere long and slender, medially slightly broadened and with distinct peg-like setae, distal portion of paramere with normal setation.

Comments: This species is only known from Tasmania, where it is widely distributed (Fig. 8J).

5.2 *Sphictostethus connectens* (Turner, 1915) **n. comb.** (Figs. 1K; 3H)

Calopompilus connectens Turner, 1915: Turner 1915a: 66.
Priocnemis connectens: Turner 1915b: 334 [generic transfer]; Elliott 2007 [cat.].

Holotype ♀, Australia, South Tasmania, Mount Wellington, 1300–2300 ft, January, R. E. Turner (BMNH Reg. no. 19.193). – Other specimens examined: 2 ♀♀, Australia, Tasmania, Mount Barrow Road, 890 m, 15.–17.II.1980, *Nothofagus* etc., flight

intercept window trap 581, A. NEWTON, M. THAYER (ANIC); 1 ♀, Australia, Tasmania, Mount Field National Park, Lake Dobson Road, 240 m, 30.I.–5.II.1980, wet sclerophyll, window-pane gutter trap, A. NEWTON, M. THAYER (SMNS); 1 ♀, Australia, Tasmania, Mount Field National Park, I.–II.1983, I. GAULD (BMNH); 2 ♀♀, Australia, Tasmania, 10 km East-Northeast of Nunamara, 41°22'S 147°24'E, ex pantrap, 12.I.–6.II.1983, I. D. NAUMANN & J. C. CARDALE (WINC).

Diagnosis: Female with antennae uniformly orange (Fig. 3H); ventral margin of clypeus distinctly orange (Fig. 1K); foretibia without apical spine; forewing light orange, with two brown bands of infuscation and greyish apical wing margin; metapostnotum with median sulcus; metasoma uniformly dark brown to black.

Description, female (Fig. 3H): Body length: 7.46–10.47 mm, head plus mesosoma: 4.0–5.3 mm. Colour: Head, mesosoma and metasoma dark brown to black, coxae, trochanters and proximal half of tibiae dark brown (some specimens have the tibiae completely orange), rest of legs orange, antennae orange, ventral margin of clypeus orange (extent of clypeus colouration varies from less than half to three-quarters height of clypeus). Head (Fig. 1K): Head sculpture finely punctuate, with dense short, white setation, that is more conspicuous on lower face. One row of elongate setae present along upper inner eye margin. Inner eye margin slightly incised medially, eye 1.78–1.85 times as long as wide. Malar space very short. Clypeus 2.71–2.90 times as wide as high, with dense white setation and irregular row of elongate setae near ventral margin, setae arising from distinct punctures; ventral clypeal margin slightly incised medially. First flagellomere 5.86–6.80 times as long as wide and 1.17–1.51 times as long as second flagellomere. Mesosoma: Pronotum very short, posterior margin deeply incised, surface finely punctuate. Mesonotum finely punctuate, mesoscutum with parapsidal sulcus, parascutal carina not distinctly raised. Mesoscutellum with medially distinct scutoscutellar sulcus. Mesopleuron ventrolaterally slightly produced. Metanotum relatively long, with distinct metascutellum. Metapostnotum well developed, median length about 0.71–0.88 times as long as metascutellum, dorsal surface with distinct transverse striae, median sulcus present. Propodeum high, apically rounded, with distinct declivity, propodeal spiracles elongate but narrow, without raised margin; propodeal surface finely reticulate without transverse rugae. Wings: Macropterous, forewing light orange, with two brown bands of infuscation and greyish apical wing margin, distal brown band covering SMC2 and proximal half of SMC3, area between distal brown band and apical wing margin light orange. SMC3 distinctly longer and higher than SMC2. Terminal abscissa of vein M reaches wing margin as spectral vein. Legs: Tarsal claws pectinate, elongate, not strongly curved, with ventral tooth that is about as high as claw. Tarsal plantulae present. Foretibia without elongate apical spine. Hind tibia with inconspicuous toothed scales. Metasoma: T1 slightly petiolate anteriorly, metasomal terga with fine reticulation and dense short setation. S2 with shallow transverse groove. Apex of metasoma with long setae.

Male, unknown.

Comments: We transfer this species to *Sphictostethus* as it shows the diagnostic features of the genus. *Sphictostethus connectens* seems to be closely related to the morphologically similar species *S. aliciae* and *S. xanthochrous*, all of which are only known from Tasmania (Fig. 8J, K, M).

5.3 *Sphictostethus dorrigoensis* **n. sp.**
(Figs. 1L; 3D)

Holotype ♀: Australia, New South Wales, Dorrigo National Park, 12.II.1968, D. H. COLLESS (ANIC).

Etymology: Named after the type locality.

Diagnosis: Large species with conspicuous bicolouration: antennae, mesosoma, legs and first metasomal segment orange, rest of metasoma and head dark brown (Fig. 3D); head dorsally produced (Fig. 1L); foretibia without apical spine.

Description, female (Fig. 3D): Body length: 12.56 mm, head plus mesosoma: 6.99 mm. Colour: Antennae, mesosoma, legs and first metasomal segment orange, rest of metasoma and head dark brown. Head (Fig. 1L): Head sculpture finely punctuate, with very short white setation, that is most conspicuous on lower face. One row of elongate setae present along upper inner eye margin. Setation absent along back of head. Occipital carina distinctly raised. Inner eye margin slightly incised medially, eyes ventrally diverging, eye 1.84 times as long as wide. Malar space very short. Clypeus 2.49 times as wide as high and densely covered with distinct setae, setation absent ventromedially; row of elongate setae present near ventral margin, setae arising from distinct punctures; ventral clypeal margin convex, i. e. incised medially. Anterior tentorial pits deep and conspicuous. First flagellomere 9.7 times as long as wide and 1.26 times as long as second flagellomere. Vertex conspicuously produced dorsally. Mesosoma: Pronotum short, posterior margin deeply incised. Mesoscutum with parapsidal sulcus, parascutal carina slightly raised. Mesoscutellum raised medially, with distinct scutoscutellar sulcus. Metanotum with flattened, indistinct metascutellum. Mesopleuron ventrolaterally produced, but not into distinct tubercles. Metanotum short, with raised metascutellum. Median length of metapostnotum 1.4 times as long as metascutellum, dorsal surface with distinct transverse striae and median sulcus. Propodeum slightly flattened, without distinct declivity,

propodeal spiracles elongate but narrow, with raised margin; propodeal surface transversely rugulose. Wings: Macropterous, forewing light orange, with small, irregular infuscation along cu-a and anterior (vertical) portion of M, and with band-like infuscation covering proximal half of marginal cell, most of SM2 and SM3 and parts of discal 2 and discal (3). Apical margin of forewing slightly darkened. SMC3 longer and higher than SMC2. Terminal abscissa of vein M reaches wing margin as hardly visible, relict spectral vein. Legs: Tarsal claws pectinate, elongate, not strongly curved, with short ventral tooth that is shorter than claw. Tarsal plantulae present. Foretibia without distinct apical spine. Hind tibia with weakly developed toothed scales. Metasoma: T1 anteriorly petiolate, with dense, but short and indistinct white setation. Same setation present on remaining mesomal terga and sterna. S2 with shallow transverse groove. Apex of metasoma with long setae.

Male, unknown.

Comments: This large and distinct species is only known from the type specimen collected in the Dorrigo National Park (Fig. 8A). This park is part of the Gondwana rainforests of Australia and is a UNESCO World Heritage Site.

5.4 *Sphictostethus gadali* **n. sp.**
(Figs. 1M, N; 3F; 5D; 6C; 7C)

Holotype ♀: Australia, Australian Capital Territory, Canberra, 30.III.1985, E. McC.Callan (ANIC).

Paratypes: 1 ♀, 1 ♂, Australia, Australian Capital Territory, National Botanic Gardens, 13.II.1981, Tidemann (ANIC); 1 ♀, Australia, Australian Capital Territory, Weston, 7.I.1974, T. Bellas (SMNS); 1 ♂, Australia, Australian Capital Territory, Black Mountain, Malaise Site 2, 4.–17.II.1980, D. H. Colless (SMNS); 1 ♀, Australia, New South Wales, Dorrigo National Park, 12.II.1968, D. H. Colless (ANIC); 1 ♀, Australia, Victoria, Cann Valley Highway, 7 km Southwest of New South Wales border, ex alcohol collection, 25.II.1980, I. D. Naumann & J. C. Cardale (WINC); 1 ♀, Australia, South East Queensland, Cunningham's Gap, rainforest pitfall 31B, 762 m, 1974–1975, G. B. & S. R. Monteith (ANIC); 1 ♀, Australia, Queensland, Sandgate, 27.VIII.1931 (ANIC); 1 ♂, Australia, Queensland, Brisbane, 4.XII.1935, A. May (QDPIF).

Etymology: The word 'gadali' means 'to hunt' in the Ngunnawal language, which was traditionally spoken in the region where the type was collected. The species epithet is to be treated as a noun in apposition.

Diagnosis: Foretibia in female with distinctly elongate apical spine; ventral clypeal margin slightly incised medially (Fig. 1M). Forewing in both sexes hyaline, with two brown bands of infuscation and greyish apical wing margin. Male genitalia with lamina volsellaris having one large and blunt distal hook, proximal hook absent (Fig. 7C).

Description, female (Fig. 3F): Body length: 4.90–6.83 mm, head plus mesosoma: 2.70–4.08 mm. Colour: Head and metasoma dark brown, mesosoma and legs red-brown, some specimens with pronotum and/or mesoscutum dark brown; antennae brown, darkened along distal segments; clypeus with narrow light brown rim along ventral margin. Head (Fig. 1M): Head sculpture finely punctuate, with dense short, white setation. One row of elongate setae present along upper inner eye margin. Inner eye margin slightly incised medially, eye 1.7–1.8 times as long as wide. Malar space very short. Clypeus 3.12–3.35 times as wide as high, with dense white setation and regular row of elongate setae near ventral margin; ventral clypeal margin slightly incised medially. First flagellomere 4.64–5.07 times as long as wide and 1.11–1.20 times as long as second flagellomere. Mesosoma: Pronotum very short, posterior margin deeply incised, surface finely punctuate. Mesonotum finely punctuate, mesoscutum with parapsidal sulcus, parascutal carina slightly raised. Mesoscutellum with medially distinct scutoscutellar sulcus. Mesopleuron ventrolaterally not distinctly produced. Metanotum with distinct, reticulate metascutellum. Metapostnotum well developed, median length 0.93–1.00 times as long as metascutellum, dorsal surface with distinct transverse striae, median sulcus present and broad. Propodeum with distinct declivity, propodeal spiracles elongate but narrow, without raised margin; propodeal surface finely reticulate without transverse rugae. Wings: Macropterous, forewing hyaline, with two brown bands of infuscation and greyish apical wing margin, second brown band covers SMC2 and SMC3 completely. SMC3 narrow on marginal cell, about as wide as SMC2; SMC3 broad on M, broader than SMC2; 3rs-m curved, higher than 2rs-m. Terminal abscissa of vein M reaches wing margin as spectral vein. Legs: Tarsal claws pectinate, elongate, not strongly curved, with ventral tooth that is about as high as claw. Tarsal plantulae present. Foretibia with distinctly elongate apical spine. Hind tibia without toothed scales. Metasoma: Metasoma shiny, T1 petiolate anteriorly, metasomal terga with fine reticulation and dense short setation. S2 with deep transverse groove. Apex of metasoma with long setae.

Description, male (Fig. 5D): Body length: 4.22–5.61 mm, head plus mesosoma: 2.42–2.99 mm. Colour: Legs orange-brown, head, mesosoma and metasoma varying from uniformly red-brown to dark brown, antennae uniformly orange-brown or darkened along apical flagellomeres; clypeus completely orange-brown or with narrow orange-brown rim along ventral margin. Head (Fig. 1N): Eye 1.67–1.79 times as long as wide. Clypeus 2.73–2.86 times as wide as high, without row of elongate setae near ventral margin. First flagellomere 2.75–3.00 times as long as wide and 0.97–1.00 times as long as second flagellomere. Mesosoma: Mesoscutellum with

medially distinct scutoscutellar sulcus. Mesopleuron ventrolaterally not distinctly produced. Metanotum with distinct, reticulate metascutellum. Metapostnotum 0.92–1.21 times as long as metascutellum. Propodeum flattened, without distinct declivity. Legs: Foretibia without distinctly elongate apical spine. Metasoma: T1 elongate and distinctly petiolate anteriorly. S2 without transverse groove. Subgenital plate (Fig. 6C) elongate, with scattered, long setation, tip narrowly rounded. Male genitalia (Fig. 7C) with aedeagus much shorter than parapenial lobe and digitus volsellaris. Digitus volsellaris straight, longer than parapenial lobe. Lamina volsellaris with one large and blunt distal hook, proximal hook absent. Paramere long and slender, uniformly setose.

Comments: This species shows a wide distribution from south east Queensland, eastern New South Wales to eastern Victoria (Fig. 8B).

5.5 *Sphictostethus geevestoni* **n. sp.**
(Figs. 2A, B; 3B; 5B; 6A; 7A)

Holotype ♀: Australia, Tasmania, 13 km West of Geeveston I.1983, I. D. Gauld (ANIC).

Paratypes: 2♂♂, Australia, Tasmania, Barrow Creek, 8 km Northeast of Nunamara, 41°21'S 147°22'E, Malaise/ethanol, 12.I.–6.II.1983, I. D. Naumann & J. C. Cardale (ANIC, WINC); 2♂♂, Australia, Tasmania, West side Lake St. Clair, ca. 750 m, 25.–29.I.1980, Eucalypt-Acacia forest, A. Newton, M. Thayer, window-pane gutter trap (ANIC, SMNS); 1♂, Australia, Tasmania, Mount Field National Park, I.–II.1983, I. Gauld (BMNH).

Etymology: Named after the type locality.

Diagnosis: Body uniformly dark brown to black; antennae orange; wings hyaline with two brown bands of infuscation and greyish apical wing margin. Female with ventral clypeal margin straight (Fig. 2A) and foretibia without elongate apical spine. Parameres in male medially with reduced setation; aedeagus much shorter than parapenial lobe (Fig. 7A).

Description, female (Fig. 3B): Body length: 8.23 mm, head plus mesosoma: 4.36 mm. Colour: Head, mesosoma, metasoma, coxae, trochanters and tibiae dark brown to black, antennae, ventral margin of clypeus and rest of legs orange. Head (Fig. 2A): Head sculpture finely punctuate, with dense white setation, that is more conspicuous on lower face. One row of elongate setae present along upper inner eye margin. Inner eye margin slightly incised medially, eye 1.8 times as long as wide. Malar space absent. Clypeus 2.52 times as wide as high, with dense white setation and irregular row of elongate setae near ventral margin, setae arising from distinct punctures; ventral clypeal margin straight. First flagellomere 3.8 times as long as wide and 1.06 times as long as second flagellomere. Mesosoma: Pronotum very short, posterior margin deeply incised, surface finely reticulate. Mesoscutum finely reticulate, with parapsidal sulcus, parascutal carina not distinctly raised. Mesoscutellum finely punctuate, medially with distinct scutoscutellar sulcus. Mesopleuron ventrolaterally not distinctly produced. Metascutellum distinctly marked by lateral depressions. Metapostnotum well developed, posteromedially slightly invaginated, median length 0.74 times as long as metascutellum, dorsal surface with distinct transverse striae, median sulcus present. Propodeum with distinct declivity, propodeal spiracles elongate but narrow, without raised margin; propodeal surface finely reticulate without transverse rugae. Wings: Macropterous, forewing hyaline, with two brown bands of infuscation and greyish apical wing margin. SMC3 very narrow on marginal cell, narrower than SMC2, 3rs-m straight, longer than 2rs-m. Terminal abscissa of vein M reaches wing margin as distinct vein. Legs: Tarsal claws pectinate, elongate, not strongly curved, with ventral tooth that is slightly shorter than claw. Tarsal plantulae present. Foretibia without elongate apical spine. Hind tibia with inconspicuous toothed scales. Metasoma: T1 petiolate anteriorly, metasomal terga with fine reticulation and dense short setation. S2 with shallow transverse groove. Apex of metasoma with long setae.

Description, male (Fig. 5B): Body length: 4.73–6.47 mm, head plus mesosoma: 2.78–3.36 mm. Colour as in female. Head (Fig. 2B): Row of elongate setae along upper inner eye margin absent. Eye 1.73–1.80 times as long as wide. Clypeus 2.47–2.67 times as wide as high. Malar space very short. First flagellomere 2.37–2.44 times as long as wide and 0.88–0.91 times as long as second flagellomere. Mesosoma: Mesopleuron ventrolaterally slightly produced. Metascutellum distinctly marked by lateral depressions, surface transversely striate, with short white setation. Metapostnotum well developed, posteromedially not invaginated, 0.70–0.95 times as long as metascutellum. Propodeum dorsally flattened, without distinct declivity. Wings: SMC3 not distinctly narrowed on marginal cell, about as wide as SMC2, 3rs-m curved. Legs: Tarsal claws pectinate, elongate, not strongly curved, with ventral tooth that is slightly shorter than claw. Tarsal plantulae present. Foretibia without elongate apical spine. Hind tibia with inconspicuous toothed scales. Metasoma: S2 without shallow transverse groove. Subgenital plate (Fig. 6A) moderately elongate, with dense short setation, tip broadly rounded. Male genitalia (Fig. 7A) with aedeagus much shorter than parapenial lobe and digitus volsellaris. Digitus volsellaris straight, slightly longer than parapenial lobe. Lamina volsellaris with two hooks, of which the distal one is larger. Paramere long and slender, medially with reduced setation.

Comments: This species is only known from Tasmania, where it is widely distributed (Fig. 8L).

5.6 *Sphictostethus haoae* **n. sp.**
(Figs. 1G; 2C, D; 4A; 5E; 6B; 7B)

Holotype ♀: Australia, New South Wales, Toonumbar National Park, 5 km South of Hanrahans, Murray Scrub Road, 28°28'S 152°43'E, yellow pans, wet sclerophyll forest, 350 m, 17.–18.XII.1998, D. Bickel (AM Reg. no. K240863).

Paratypes: 1 ♀, Australia, New South Wales, Tooloom Plateau, 14 km West of Urbenville, ex pantraps, 15.–21.II.1984, I. D. Naumann (SMNS); 1 ♀, Australia, New South Wales, Ewingar State Forest, Elkhorn Road, 29°06'42"S 152°26'56"E, pitfall 12AR, 710 m, 4.II.–9.IV.1993, M. Gray & G. Cassis, ne NSW NPWS Survey (AM Reg. no. K240901); 1 ♀, 1 ♂, Australia, New South Wales, Wiangaree State Forest, Isakson Ridge, 1050 m, 29.II.–3.III.1980, *Nothofagus moorei* rainforest, A. Newton & M. Thayer, flight intercept window/trough trap (ANIC); 1 ♀, Australia, North East Queensland, Windsor Tableland, III.1981, R. Storey (QDPIF); 1 ♀, Australia, North Queensland, Mossman Bluff Track, 5–10 km West of Mossman, 17.–31.XII.1988, Site 8, 1180 m, flight intercept, Monteith, Thompson & Anzses (QM); 1 ♀, Australia, Queensland, Mount Glorious, II.–VI.1977, A. Hiller (ANIC); 1 ♂, Australia, Queensland, Mount Glorious, near Brisbane, X.1976–I.1977, Z. Bouçek (BMNH).

Etymology: Named in honour of Ms. Bin Hao (Harbin, China), the mother-in-law of the first author.

Diagnosis: Fore wing in female yellowish, with two dark brown bands of infuscation and without greyish apical wing margin; female foretibia with distinctly elongate apical spine; female clypeus with ventral margin deeply but narrowly incised medially and lateral corner with distinct edges (Fig. 2C). Parameres in male medially with reduced setation; aedeagus about the same height as parapenial lobe (Fig. 7B).

Description, female (Fig. 4A): Body length: 6.76–7.99 mm, head plus mesosoma: 3.33–4.15 mm. Colour: Head dark brown, clypeus light orange-brown to brown, antennae uniformly orange-brown, mesosoma red-brown to brown, legs uniformly orange-brown, metasoma dark brown. Head (Fig. 2C): Head sculpture finely punctuate, with dense short, white setation. One row of elongate setae present along upper inner eye margin. Inner eye margin slightly incised medially, eye 1.83–2.18 times as long as wide. Malar space very short. Clypeus 2.91–3.17 times as wide as high, with dense white setation and irregular row of elongate setae near ventral margin; ventral clypeal margin deeply but very narrowly incised medially, lateral corners of clypeal margin with distinct edges. First flagellomere 4.67–5.50 times as long as wide and 1.06–1.12 times as long as second flagellomere. Mesosoma: Pronotum very short, posterior margin deeply incised, surface finely punctuate. Mesonotum finely punctuate, mesoscutum with parapsidal sulcus, parascutal carina slightly raised. Mesoscutellum with medially distinct scutoscutellar sulcus. Mesopleuron ventrolaterally slightly produced. Metanotum with distinct reticulate and slightly raised metascutellum. Metapostnotum well developed, median length 0.84–0.89 times as long as metascutellum, dorsal surface with distinct transverse striae, median sulcus present, posterior margin of metapostnotum slightly incised medially. Propodeum with distinct declivity, propodeal spiracles elongate but narrow, without raised margin; propodeal surface with fine transverse rugae. Wings: Macropterous, forewing yellowish, with two dark brown bands of infuscation and without greyish apical wing margin, second brown band covers SMC2 and SMC3 completely. SMC3 relatively narrow on marginal cell, about as wide as SMC2. SMC3 wide on M, much wider than SMC2. 3rs-m curved, higher than 2rs-m. Terminal abscissa of vein M reaches wing margin as hardly visible spectral vein. Legs: Tarsal claws pectinate, elongate, not strongly curved, with ventral tooth that is slightly higher than claw. Tarsal plantulae present. Foretibia with distinctly elongate apical spine. Hind tibia with toothed scales completely absent. Metasoma: Metasoma shiny, T1 petiolate anteriorly, metasomal terga with fine reticulation and dense short setation. S2 with deep transverse groove. Apex of metasoma with long setae.

Description, male (Fig. 5E): Body length: 5.09–6.66 mm, head plus mesosoma: 2.56–3.63 mm. Colour: Head (without clypeus) and metasoma dark brown, antennae, clypeus, mesosoma, legs light brown, apical flagellomere darkened. Head (Fig. 2D): Eye 1.64–1.76 times as long as wide. Clypeus 2.45–2.47 times as wide as high, ventral clypeal margin straight. First flagellomere 2.71–2.88 times as long as wide and 0.86–0.88 times as long as second flagellomere. Mesosoma: Metapostnotum 1.00–1.05 times as long as metascutellum. Propodeum flattened, without distinct declivity. Wings: Forewing with SMC3 narrow on marginal cell, narrower than SMC2. SMC3 broad on M, about as broad as SMC2. Legs: Foretibia without apical spine. Hind tibia without toothed scales. Metasoma: T1 distinctly petiolate. S2 without deep transverse groove. Apex of metasoma without long setae. Male genitalia with aedeagus about the same height as parapenial lobe. Digitus volsellaris distinctly longer than aedeagus and parapenial lobe. Lamina volsellaris with two hooks, of which the distal one is large and the proximal one hardly traceable. Paramere long and slender, with long setae apically, medially bare. Subgenital plate elongate, with dense, long setation, tip rounded.

Comments: This species has been collected in various localities in north east Queensland, south east Queensland and the north eastern regions of New South Wales (Fig. 8C). Together with *S. yidyam* this species shows the northern-most distribution of the Australian *Sphictostethus* species.

5.7 *Sphictostethus infandus* (Smith, 1868) **n. comb.**
(Figs. 2E, F; 3G; 5G; 6H; 7H)

Pompilus infandus Smith, 1868: 244. Froggatt 1892: 213 [cat.]; Dalla Torre 1897: 295 [cat., dist.]; Elliott 2007 [cat.].

Holotype ♂, Australia (BMNH Reg. no. 19.158). – Other specimens examined: 1 ♀, Australia, New South Wales, Mount Tomah, Blue Mountains, 26.III.1987, N. W. Rodd (AM Reg. no. K240910); 1 ♂, Australia, New South Wales, Clarence, Blue Mountains, 10.I.1989, N.W. Rodd (AM Reg. no. K240911); 1 ♀, Australia, South Australia, Stirling, 'Woorabinda', Stirling Linear Park, Mt Lofty Ranges, Malaise trap, 3.–14.I.2001, N. Stevens (WINC).

Diagnosis: Forewing orange without dark infuscations; body bicoloured with distinct black/orange colouration (Figs. 3G; 5G); head with dense fine punctuation and scattered large punctures. Male with lateral tubercles on subgenital plate slightly extended and distinctly pointed (Fig. 6H).

Description, female (Fig. 3G): Body length: 25.03 mm, head plus mesosoma: 13.74 mm. Colour: Head and body black apart from orange propodeum, and the first and second metasomal segment which are mainly orange; T1 orange but anteriorly black, T2 and S2 posteriorly black; antennae and legs orange. Head (Fig. 2E): Head with dense fine punctuation and scattered large punctures. Long setae arising from the large punctures and very short setae from the fine punctures. Inner eye margin apically white, medially incised, eye 1.97 times as long as wide. Malar space present and distinct. Clypeus 2.32 times as wide as high and densely covered with setae, setation absent ventromedially; row of elongate setae present near ventral margin; ventral clypeal margin straight. Labrum with dense orange setation and ventrally with stout bristles. First flagellomere 6.31 times as long as wide and 1.19 times as long as second flagellomere. Mesosoma: Pronotum short, posterior margin deeply incised. Mesoscutum with parapsidal sulcus, parascutal carina not distinctly raised. Mesoscutellum flattened, scutoscutellar sulcus deep medially. Mesopleuron tuberculately produced ventrolaterally. Metanotum laterally broadened, with distinct metascutellum. Metapostnotum 0.73 times as long as metascutellum, dorsal surface with distinct transverse striae, medially with smooth depression. Propodeum with distinct declivity, propodeal spiracles elongate but narrow, with raised margin; propodeal surface transversely rugulose; with distinct pair of lateral tubercles posterior to spiracles. Wings: Macropterous, forewing orange, slightly darkened along apical margin. SMC3 greatly enlarged, about twice as long and 1.5 times as high as SMC2. Hind wing orange, slightly darkened along apical margin. Legs: Tarsal claws pectinate, with distinct ventral tooth that is shorter than claw. Tarsal plantulae present. Foretibia without distinct apical spine. Hind tibia with distinct toothed scales. Metasoma: T1 anteriorly petiolate, metasomal segments with dense, but short and indistinct setation. Apex of metasoma with longer setae. S2 with deep transverse groove.

Description, male (Fig. 5G): Body length: 17.68 mm, head plus mesosoma: 10.20 mm. Colour, sculpture and setation as in female. Head (Fig. 2F): Eye 1.89 times as long as wide. Clypeus 2.47 times as wide as high. First flagellomere 3.55 times as long as wide and 0.99 times as long as second flagellomere. Mesosoma: Median length of metapostnotum 0.76 times as long as metascutellum. Metasoma: Subgenital plate (Fig. 6H) with distinctly pointed lateral tubercles for insertion with S6; surface with scattered setae, tip narrowly rounded. Male genitalia (Fig. 7H) with aedeagus shorter than parapenial lobe and digitus volsellaris. Digitus volsellaris slightly shorter than parapenial lobe. Digiti volsellares medially slightly extended, apical portions bent inwards. Lamina volsellaris with two hooks, of which the proximal one is slightly larger. Paramere long and slender, with long setation.

Comments: Despite its large size and distinctive morphology this species has remained largely unnoticed by taxonomists since Smith (1868) described it in the genus *Pompilus* Fabricius (Pompilinae). We here transfer it to *Sphictostethus* as it is a member of Pepsinae and shows the diagnostic features of the genus. This species is only known from three localities, Melbourne (label data from BMNH specimens, communicated by Gavin Broad), the Blue Mountains in New South Wales, and the Mount Lofty Ranges in South Australia (Fig. 8D). As far as is known, this species has the western-most distribution of all *Sphictostethus* and is the only one that has been recorded from South Australia.

5.8 *Sphictostethus insularis* **n. sp.**
(Figs. 2G, H; 4E; 5C; 6G; 7G)

Holotype ♀: Australia, New South Wales, Lord Howe Island, Ned's Beach, XII.1972, Z. Liepa (ANIC).

Paratypes: 2 ♀♀, Australia, New South Wales, Lord Howe Island, 30.XI.1955, S. J. Paramonov & Z. Liepa (ANIC, BMNH); 1 ♀, Australia, New South Wales, Lord Howe Island, Mount Gower, walking trail, 31°35'8"S 159°4'45"E, 28.XI.–5.XII.2000, CBCR, Australian Museum, LHIS049/03, pit trap (SMNS); 1 ♀, Australia, New South Wales, Lord Howe Island, Western face of Mount Lidgberg, at base of summit tabletop, 31°34'22"S 159°4'46"E, 2.–12.XII.2000, CBCR, Australian Museum, LHIS038/01, pit trap (AM Reg. no. K281473); 1 ♀, same collection data as before, but LHIS038/05 (WINC); 1 ♀, Australia, New South Wales, Lord Howe Island, Southeastern face of Mount Lidgberg, at base of summit tabletop, 31°34'26"S 159°4'54"E, 25.XI.–2.XII.2000, CBCR, Australian Museum, LHIS031/05, pit trap (AM Reg. no. K281470); 1 ♂, Australia, New South Wales, Lord Howe Island, Ned's Beach, Muttonbird burrow, XII.1972, Z. Liepa (ANIC); 1 ♂, Australia, New South Wales, Lord Howe Island, near Ned's Beach, Malaise trap, 20.–25.II.1971, D. K. McAlpine (AM).

Fig. 1. *Sphictostethus* spp., diagnostic characters (A–G), head, frontal view (I–N). – **A**. *S. yidyam* n. sp., ♂ paratype, wings. **B**. *S. aliciae*, ♀, hind tibia. **C**. *S. picadillycircus* n. sp., ♀ paratype, hind tibia. **D**. *S. walteri* n. sp., ♂ paratype, mesosoma, dorsal view. **E**. *S. yidyam* n. sp., ♀ paratype, mesosoma, lateral view. **F**. *S. montanus* n. sp., ♀ holotype, foretibia, lateral view. **G**. *S. haoae* n. sp., ♀ paratype, foretibia, lateral view. **H**. *S. walteri* n. sp., ♀ paratype, head and mesosoma, dorsal view. **I**. *S. aliciae*, ♀ holotype. **J**. *S. aliciae*, ♂. **K**. *S. connectens*, ♀. **L**. *S. dorrigoensis* n. sp., ♀ holotype. **M**. *S. gadali* n. sp., ♀ holotype, **N**. *S. gadali* n. sp., ♂ paratype. – Abbreviations: mpn = metapostnotum, no1 = pronotum, no3 = metanotum, pd = propodeum, sc = mesoscutum, scl = mesoscutellum, SMC = submarginal cell. – Scale: 0.5 mm.

Fig. 2. *Sphictostethus* spp., head, frontal view. – **A**. *S. geevestoni* n. sp., ♀ holotype. **B**. *S. geevestoni* n. sp., ♂ paratype. **C**. *S. haoae* n. sp., ♀ holotype. **D**. *S. haoae* n. sp., ♂ paratype. **E**. *S. infandus*, ♀. **F**. *S. infandus*, ♂. **G**. *S. insularis* n. sp., ♀ holotype. **H**. *S. insularis* n. sp., ♂ paratype. **I**. *S. montanus* n. sp., ♀ holotype. **J**. *S. montanus* n. sp., ♂ paratype. **K**. *S. picadillycircus*, ♀ holotype. **L**. *S. walteri* n. sp., ♀ holotype. **M**. *S. walteri* n. sp., ♂ paratype. **N**. *S. xanthochrous* ♀. **O**. *S. yidyam* n. sp., ♀ holotype. **P**. *S. yidyam* n. sp., ♂ paratype. – Scale: 0.5 mm.

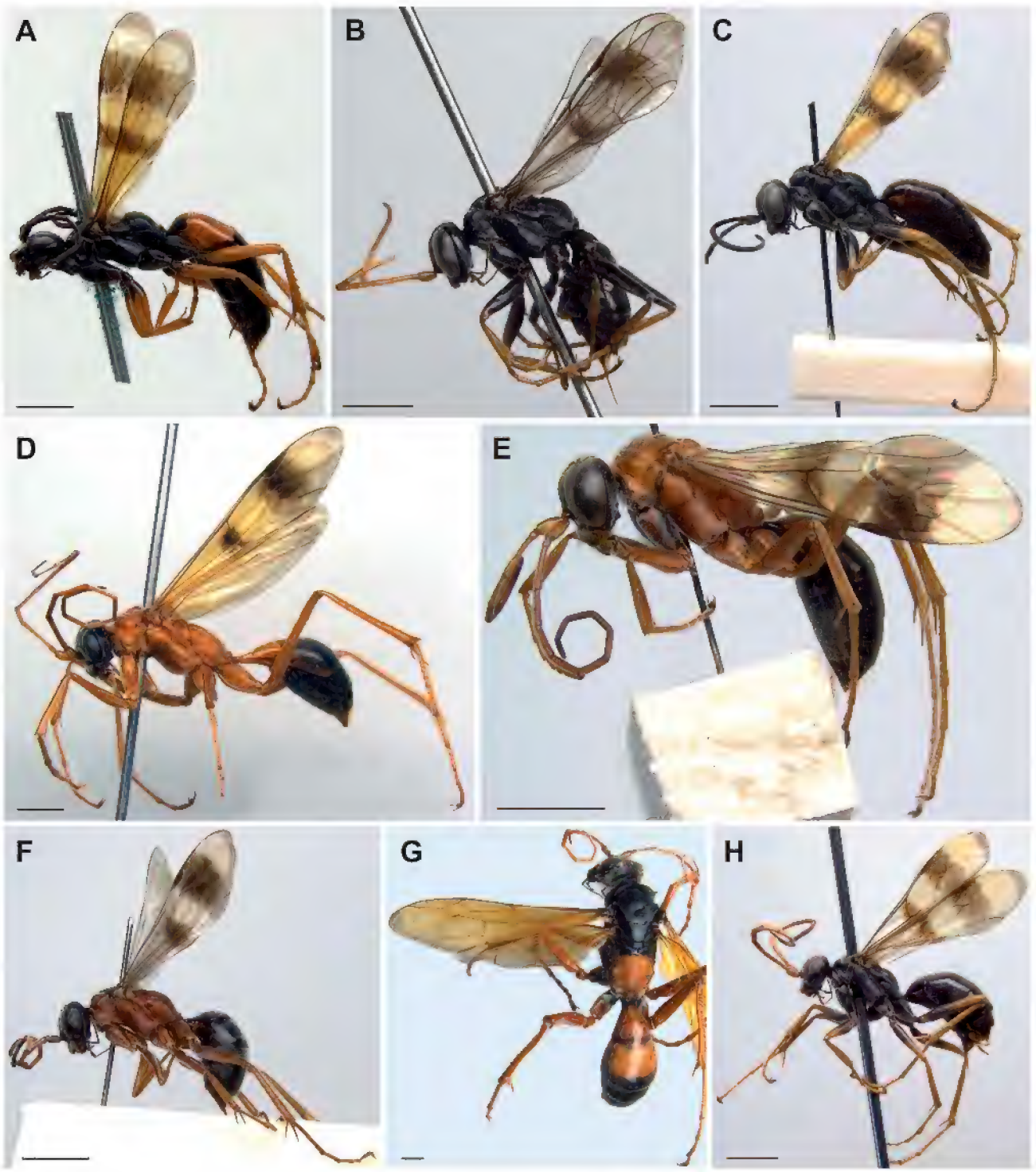

Fig. 3. *Sphictostethus* spp., females, habitus. – **A**. *S. aliciae*. **B**. *S. geevestoni* n. sp., holotype. **C**. *S. xanthochrous*. **D**. *S. dorrigoensis* n. sp., holotype. **E**. *S. montanus* n. sp., holotype. **F**. *S. gadali* n. sp., holotype. **G**. *S. infandus*. **H**. *S. connectens*. – Scale: 2 mm.

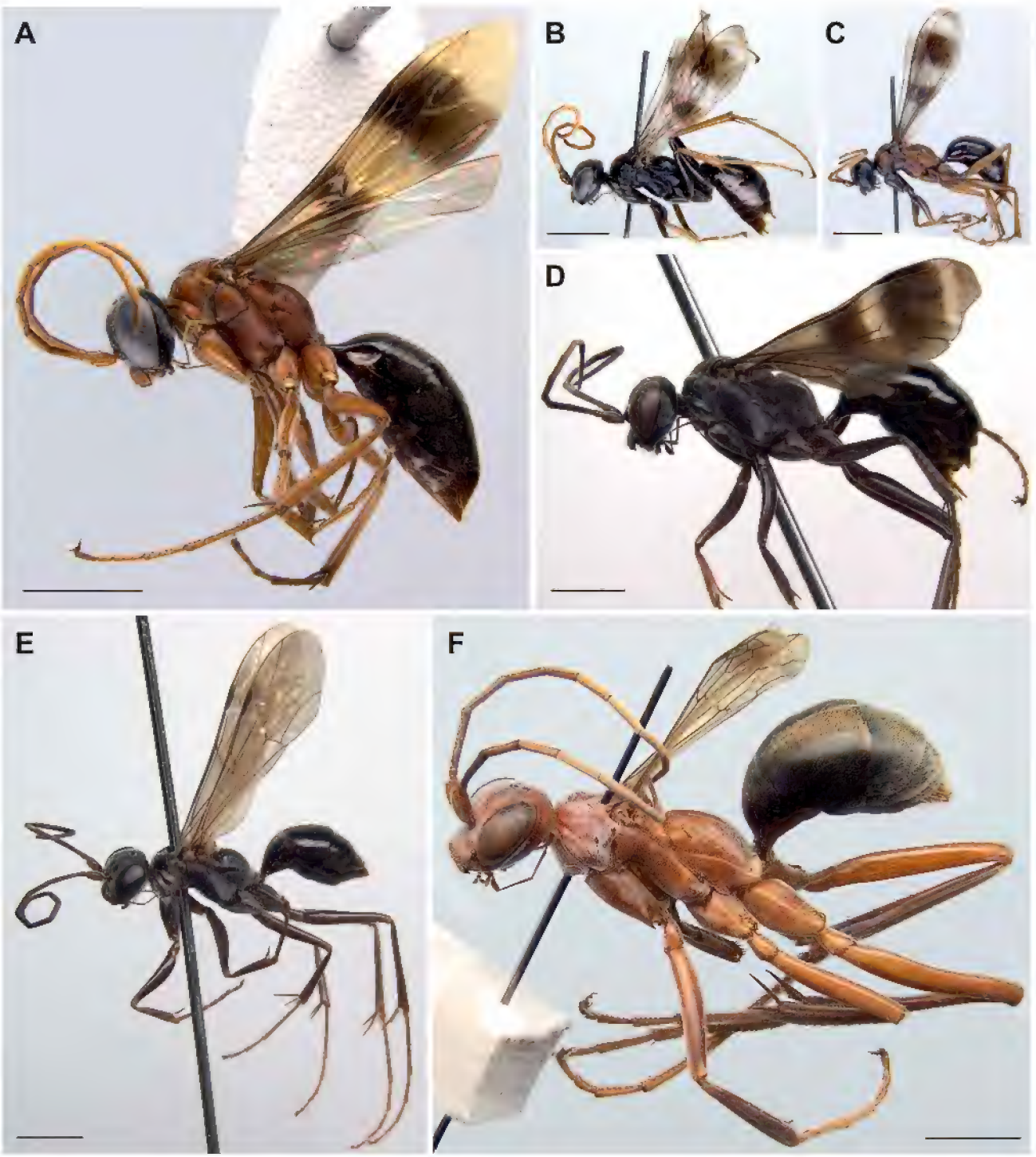

Fig. 4. *Sphictostethus* spp., females, habitus. – **A**. *S. haoae* n. sp., holotype. **B**. *S. picadillycircus* n. sp., holotype. **C**. *S. picadillycircus* n. sp., paratype. **D**. *S. yidyam* n. sp., holotype. **E**. *S. insularis* n. sp., holotype. **F**. *S. walteri* n. sp., holotype. – Scale: 2 mm.

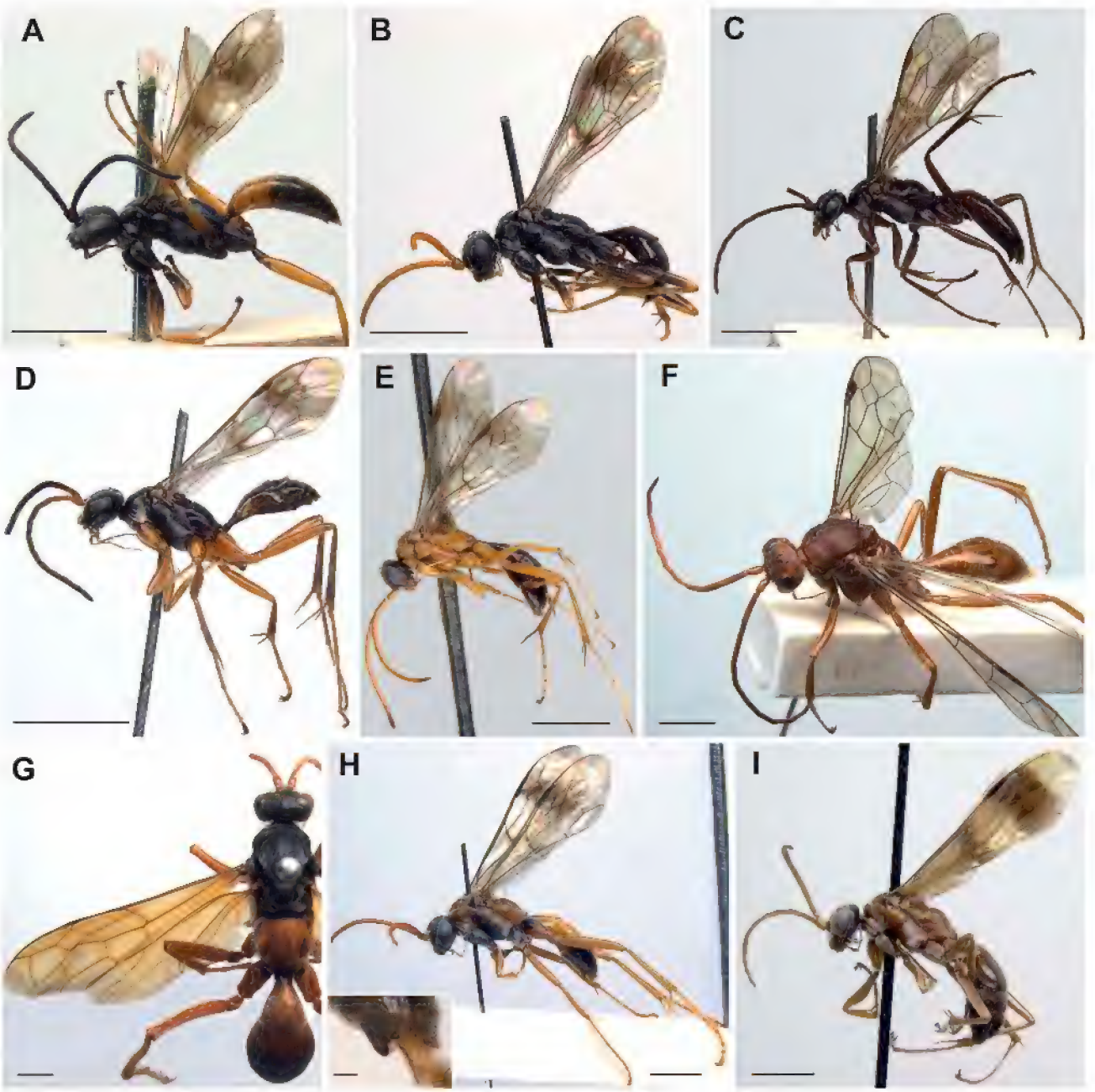

Fig. 5. *Sphictostethus* spp., males, habitus. – **A**. *S. aliciae*. **B**. *S. geevestoni* n. sp., paratype. **C**. *S. insularis* n. sp., paratype. **D**. *S. gadali* n. sp., paratype. **E**. *S. haoae* n. sp., paratype. **F**. *S. walteri* n. sp., paratype. **G**. *S. infandus*. **H**. *S. montanus* n. sp., paratype, habitus and apex of metasoma. **I**. *S. yidyam* n. sp, 'southern' specimen. – Scale: 2 mm (inlay of H: 0.2 mm).

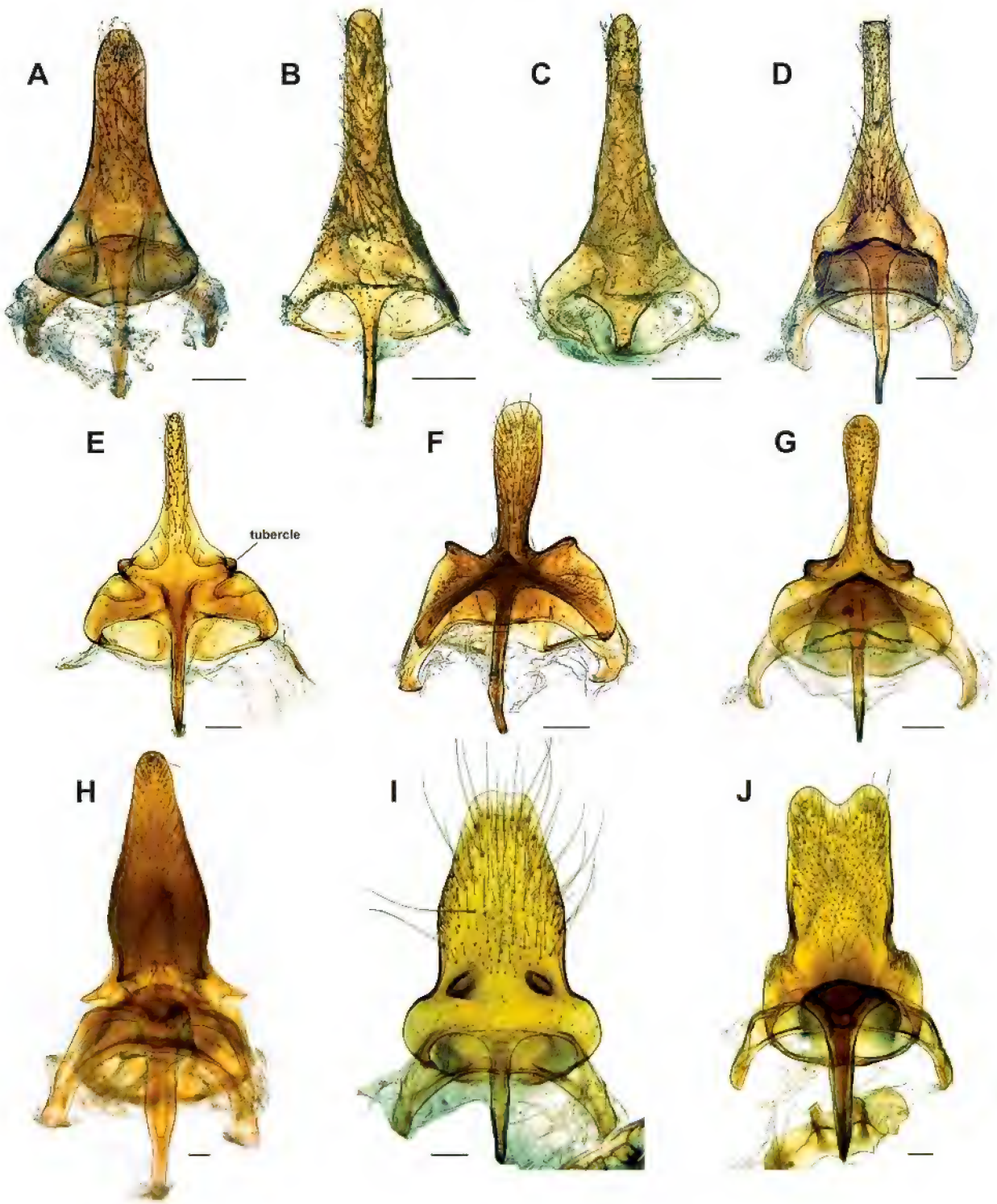

Fig. 6. *Sphictostethus* spp., subgenital plates, ventral view. – **A**. *S. geevestoni* n. sp. **B**. *S. haoae* n. sp. **C**. *S. gadali* n. sp. **D**. *S. yidyam* n. sp., 'southern' specimen. **E**. *S. montanus* n. sp. **F**. *S. aliciae*. **G**. *S. insularis* n. sp. **H**. *S. infandus*. **I**. *S. walteri* n. sp. **J**. *S. gravesii*. – Scale: 0.1 mm.

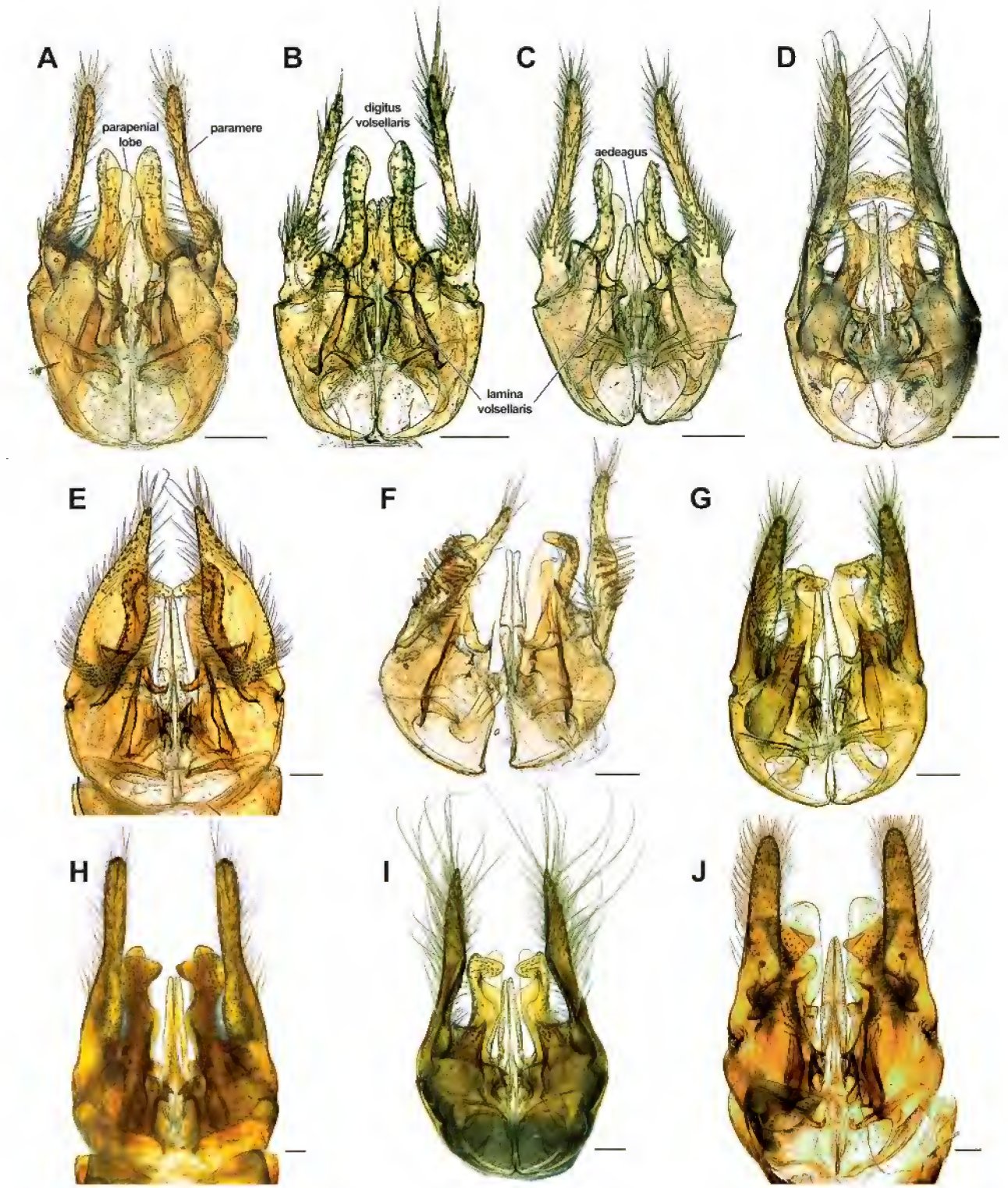

Fig. 7. *Sphictostethus* spp., male genitalia, ventral view. – **A**. *S. geevestoni* n. sp. **B**. *S. haoae* n. sp. **C**. *S. gadali* n. sp. **D**. *S. yidyam* n. sp., 'southern' specimen. **E**. *S. montanus* n. sp. **F**. *S. aliciae*. **G**. *S. insularis* n. sp. **H**. *S. infandus*. **I**. *S. walteri* n. sp. **J**. *S. gravesii*. – Scale: 0.1 mm.

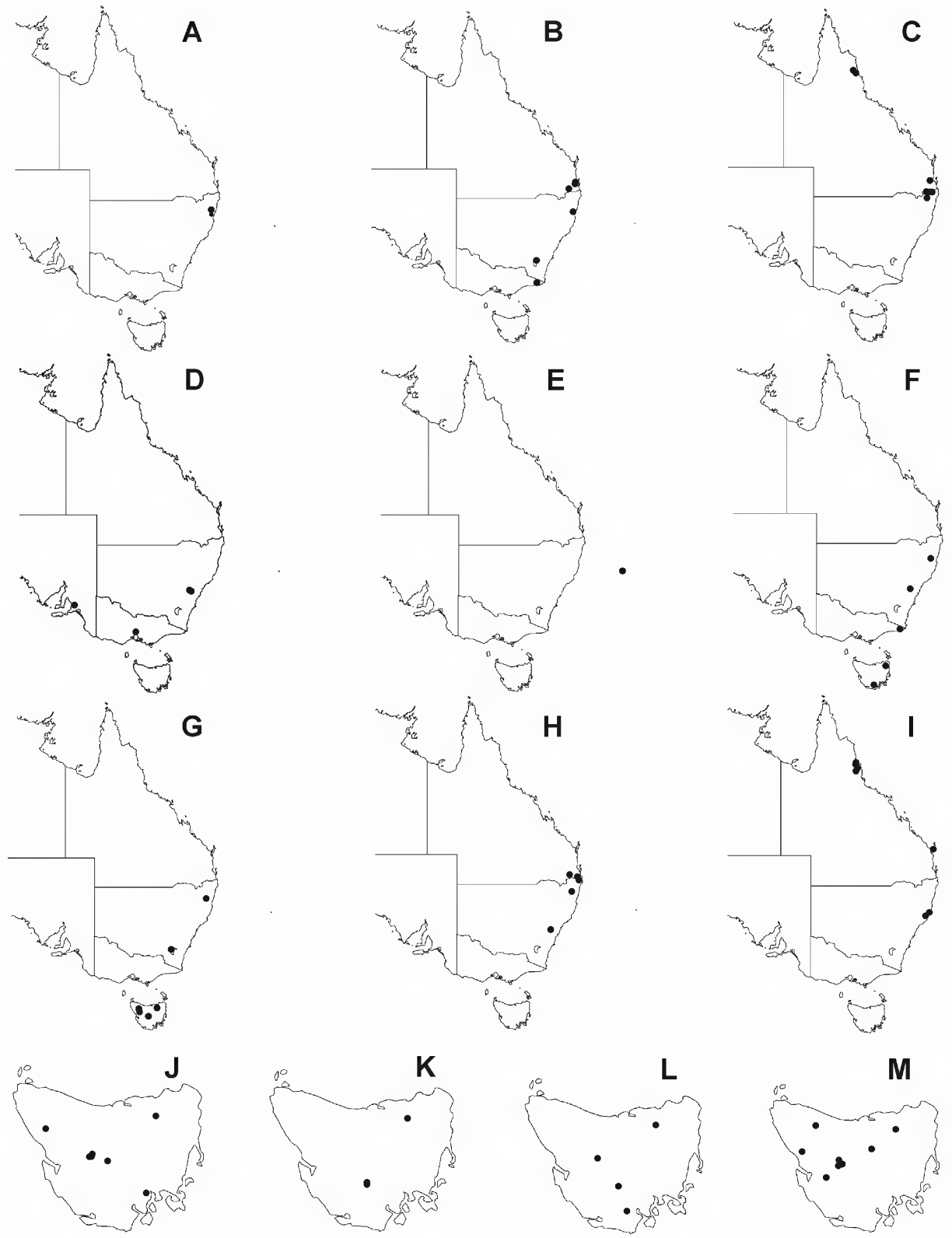

Fig. 8. Distribution of Australian *Sphictostethus*. – **A**. *S. dorrigoensis* n. sp. **B**. *S. gadali* n. sp. **C**. *S. haoae* n. sp. **D**. *S. infandus*. **E**. *S. insularis* n. sp. **F**. *S. montanus* n. sp. **G**. *S. picadillycircus*, n. sp. **H**. *S. walteri* n. sp. **I**. *S. yidyam* n. sp. **J**. *S. aliciae*. **K**. *S. connectens*. **L**. *S. geevestoni* n. sp. **M**. *S. xanthochrous*.

Etymology: Named with reference to the insular type locality.

Diagnosis: Body and appendages uniformly dark brown; wings hyaline, without infuscation (Figs. 4E, 5C). Female foretibia without distinctly elongate apical spine. Male subgenital plate with compressed lateral tubercles and parameres slightly broadened throughout whole length, parameres with long and normal setation (Fig. 7G).

Description, female (Fig. 4E): Body length: 8.36–10.05 mm, head plus mesosoma: 4.82–5.65 mm. Colour: Head, antennae, legs and body dark brown. Head (Fig. 2G): Head sculpture finely punctuate, with short white setation, that is most conspicuous on lower face. One row of elongate setae present near inner eye margin at level of ocelli. Inner eye margin slightly incised medially, eye 1.71–2.06 times as long as wide. Malar space absent. Clypeus 2.61–2.77 times as wide as high and densely covered with short white setae, setation absent ventromedially; row of elongate setae present near ventral margin, setae arising from distinct punctures; ventral clypeal margin slightly emarginate medially. First flagellomere 6.33–6.62 times as long as wide and 1.15–1.19 times as long as second flagellomere. Mesosoma: Pronotum short, posterior margin deeply incised. Mesoscutum with parapsidal sulcus, parascutal carina not raised. Mesoscutellum flattened, not distinctly raised medially. Mesopleuron tuberculately produced ventrolaterally. Metanotum with flattened, indistinct metascutellum. Metanotum short, with raised metascutellum. Metapostnotum 1.11–1.28 times as long as metascutellum, dorsal surface with distinct transverse striae and median sulcus. Propodeum with distinct declivity, propodeal spiracles elongate but narrow, without raised margin; propodeal surface transversely rugulose. Wings: Macropterous, forewing without infuscation. SMC3 slightly longer and distinctly higher than SMC2. Legs: Tarsal claws pectinate, with distinct ventral tooth that is about as high as claw. Tarsal plantulae present. Foretibia without distinct apical spine. Hind tibia with weakly developed toothed scales. Metasoma: T1 anteriorly petiolate, with dense, but short and indistinct white setation. Same setation present on remaining metasomal terga and sterna. S2 with shallow transverse groove. Apex of metasoma with long setae.

Description, male (Fig. 5C): Body length: 6.32–7.45 mm, head plus mesosoma: 3.33–3.87 mm. Colour, sculpturation and setation as in female. Head (Fig. 2H): Eye 1.73–1.88 times as long as wide. Malar space very short. Clypeus 2.74–2.80 times as wide as high. First flagellomere 3.50–3.59 times as long as wide and 0.91–0.95 times as long as second flagellomere. Mesosoma: Metapostnotum 1.20–1.24 times as long as metascutellum. Metasoma: T1 elongate and petiolate, spiracles situated in anterior half. Apex of metasoma without elongate setae. Subgenital plate (Fig. 6G) with broad base and compressed lateral tubercle for insertion with S6; apically with short setation, tip rounded. Male genitalia (Fig. 7G) with aedeagus slightly shorter than parapenial lobe and digitus volsellaris. Digitus volsellaris about as long as parapenial lobe. Digiti volsellares medially extended and adjacent to each other, apical portions bent inwards. Lamina volsellaris with two hooks, of which the proximal one is larger. Paramere relatively short and slightly broadened, with long setation.

Comments: This species is only known from Lord Howe Island, where it is apparently endemic and may represent one of the geographically most isolated pompilid species known (Fig. 8E). The only other species that has been described from Lord Howe Island is *Ctenostegus murrumbidgee* Evans, which is not endemic to the island but very widely distributed throughout Australia and Tasmania (Evans 1976).

5.9 *Sphictostethus montanus* **n. sp.**
(Figs. 1F; 2I, J; 3E; 5H; 6E; 7E)

Holotype ♀: Australia, New South Wales, Wright's Lookout, New England National Park, 4100–4000 ft, 29.X.1965, G. L. Bush, 6560 (ANIC).

Paratypes: 1♂, Australia, New South Wales, Blue Mountains, Mount Wilson, 30.III.1976, D. K. McAlpine, M. A. Schneider (AM Reg. no. K240912); 1♂, Australia, New South Wales, Blue Mountains, Mount Wilson, 17.III.1972, D. K. McAlpine (AM); 1♂, Australia, New South Wales, Blue Mountains, Mount Wilson, 15.XII.1981, I. Gauld (BMNH); 1♂, Australia, Victoria, Mount Drummer, 4.XII.1956, E. F. Riek (ANIC); 4♂♂, Australia, Tasmania, 4 km Southeast of Weldborough, 41°14'S 147°56'E, Malaise/ethanol, 13.I.–7.II.1983, I. D. Naumann & J. C. Cardale (ANIC, SMNS, WINC); 2♂♂, Australia, Tasmania, 13 km West of Geeveston, I.1983, I. D. Gauld (BMNH).

Etymology: Named after the mountainous type locality.

Diagnosis: Female foretibia without elongate apical spine; female mesosoma orange (Fig. 3E); female forewing light orange, with two brown bands of infuscation and slightly indicated greyish apical wing margin, second brown band covers SMC2 and proximal two-thirds of SMC3. Male subgenital plate with compressed lateral tubercles (Fig. 6E); male paramere broad and flap-like, setation restricted to outer margin (Fig. 7E).

Description, female (Fig. 3E): Body length: 7.54 mm, head plus mesosoma: 3.93 mm. Colour: head and metasoma dark brown, first metasomal segment with some irregular orange markings; antennae, clypeus, mesosoma and legs orange to orange-brown, coxae partly darkened. Head (Fig. 2I): Head sculpture finely punctuate, with dense short, white setation, that is more conspicuous on lower face. One row of elongate setae present along upper inner eye margin. Inner eye margin slightly incised

medially, eye 1.7 times as long as wide. Malar space very short. Clypeus 2.65 times as wide as high, with dense white setation and regular row of very elongate setae near ventral margin, setae arising from distinct punctures; ventral clypeal margin slightly incised medially. First flagellomere 6.09 times as long as wide and 1.2 times as long as second flagellomere. Mesosoma: Pronotum very short, posterior margin deeply incised, surface finely punctuate. Mesonotum finely punctuate, mesoscutum with parapsidal sulcus, parascutal carina not distinctly raised. Mesoscutellum with medially distinct scutoscutellar sulcus. Mesopleuron ventrolaterally produced. Metanotum with distinct metascutellum. Metapostnotum well developed, median length 0.94 times as long as metascutellum, dorsal surface with distinct transverse striae, median sulcus posteriorly indicated. Propodeum with distinct declivity, propodeal spiracles elongate but narrow, without raised margin; propodeal surface finely reticulate without transverse rugae. Wings: Macropterous, forewing light orange, with two brown bands of infuscation and slightly indicated greyish apical wing margin, second brown band covers SMC2 and proximal two-thirds of SMC3. SMC3 distinctly longer and higher than SMC2. Terminal abscissa of vein M reaches wing margin as distinct vein. Legs: Tarsal claws pectinate, elongate, not strongly curved, with ventral tooth that is about as high as claw. Tarsal plantulae present. Foretibia without elongate apical spine. Hind tibia with inconspicuous toothed scales. Metasoma: T1 petiolate anteriorly, metasomal terga with fine punctuation and dense short setation. S2 with deep transverse groove. Apex of metasoma with long setae.

Description, male (Fig. 5H): Body length: 6.53–8.17 mm, head plus mesosoma: 3.32–4.27 mm. Colour: Head dark brown with orange clypeus, antennae orange, mesosoma orange-brown with varying degree of melanism, ranging from: mesosoma entirely orange-brown; mesosoma darkened on propleuron, ventral and lateral mesopleuron and along propodeal spiracles; mesosoma almost entirely dark brown with orange markings restricted to pronotum, mesoscutellum, metascutellum, metapostnotum and propodeum; legs varying from entirely orange, to darkened along coxae; metasoma with first three metasomal segments orange (sometimes T3 and S3 posteriorly darkened) and rest of metasoma dark brown. Head (Fig. 2J): Eye 1.72–1.80 times as long as wide. Clypeus 2.52–2.60 times as wide as high. First flagellomere 2.10–2.52 times as long as wide and 0.93–0.98 times as long as second flagellomere. Mesosoma: Median length of metapostnotum 0.73–0.88 times as long as metascutellum, median sulcus complete. Propodeum dorsally flattened, without distinct declivity. Wings: Macropterous, forewing light orange, almost hyaline, with two brown bands of infuscation and slightly greyish apical wing margin. Terminal abscissa of vein M reaches wing margin as spectral vein. Legs: Hind tibia without toothed scales. Metasoma: S6 posteromedially with distinct posteriorly directed spine. Subgenital plate (Fig. 6E) with broad base and compressed lateral tubercle for insertion with S6; apically with short setation, tip narrowly rounded. Male genitalia (Fig. 7E) with aedeagus slightly shorter than parapenial lobe. Digitus volsellaris slightly longer than parapenial lobe. Apical portions of digiti volsellares bent inwards. Lamina volsellaris with two hooks, of which the distal one is slightly larger. Paramere broad and flap-like, with setation restricted to outer margins.

Comments: This species is widely distributed throughout eastern New South Wales, eastern Victoria and Tasmania (Fig. 8F).

5.10 *Sphictostethus picadillycircus* **n. sp.**
(Figs. 1C; 2K; 4B, C)

Holotype ♀: Australia, Australian Capital Territory, Blundells Creek, 3 km East of Picadilly Circus, 850 m, 35°22'S 148°50'E, II.1984, Weir, Lawrence & Johnson, flight intercept window/through trap (ANIC).

Paratypes: 1 ♀, same data as holotype (SMNS); 1 ♀, Australia, Australian Capital Territory, Blundells Creek Road, 850 m, 3.5 km East of Picadilly Circus, 27.I.1982, J. Lawrence, Berleseate ANIC 864, leaf & log litter (ANIC); 1 ♀, Australia, Australian Capital Territory, Blundells Creek, 35°22'S 148°50'E, I.1988, D. H. Colless (BMNH); 1 ♀, Australia, New South Wales, 24BR, 0.4 km East-Northeast of junction of Hardens & Chaelundi Roads, 30°08'S 152°25'E, Marengo SF 6/23, 1290 m (NPWS Survey), 4.II.–9.IV.1993, M. Gray, G. Cassis (AM Reg. no. K240860); 1 ♀, Australia, Tasmania, Barrow Creek, 8 km Northeast of Nunamara, 41°21'S 147°22'E, Malaise/ethanol, 12.I.–6.II.1983, I. D. Naumann & J. C. Cardale (ANIC); 1 ♀, Australia, Tasmania, 9 km South of Bronte Park, 42°12'S 146°30'E, ex pantrap, 15.I.–3.II.1983, I. D. Naumann & J. C. Cardale (ANIC); 1 ♀, Australia, Tasmania, 14 km South of Bronte Park, 42°15'S 146°29'E, Malaise/ethanol, 15.I.–3.II.1983, I. D. Naumann & J. C. Cardale (WINC); 1 ♀, Australia, Tasmania, 4 km East of Roseberry, 41°47'S 145°35'E, Malaise/ethanol, 16.I.–1.II.1983, I. D. Naumann & J. C. Cardale (ANIC); 1 ♀, Australia, Tasmania, Waratah, 31.I.1949, E. F. Riek (ANIC).

Etymology: Named after the type locality. The species epithet is to be treated as a noun in apposition.

Diagnosis: Female foretibia with distinctly elongate apical spine; ventral clypeal margin deeply and broadly incised medially (Fig. 2K).

Description, female (Fig. 4B, C): Body length: 6.13–8.24 mm, head plus mesosoma: 3.14–4.21 mm. Colour: head, mesosoma and metasoma dark brown to black, antenna orange-brown apart from darker brown scape and pedicel, all legs with coxa, trochanter and femur dark brown, and tibia and tarsus orange-brown; some specimens with metasoma partly or completely red-brown (Fig. 4C) and femora either light brown in posterior half

or with all legs completely light brown. Head (Fig. 2K): Head sculpture finely punctuate, with dense short, white setation. One row of elongate setae present along upper inner eye margin. Inner eye margin slightly incised medially, eye 1.88–1.97 times as long as wide. Malar space very short. Clypeus 3.13–3.33 times as wide as high, with dense white setation and irregular row of seven elongate setae near ventral margin; ventral clypeal margin deeply and broadly incised medially. First flagellomere 4.06–5.00 times as long as wide and 0.98–1.02 times as long as second flagellomere. Mesosoma: Pronotum very short, posterior margin deeply incised, surface finely punctuate. Mesonotum finely punctuate, mesoscutum with parapsidal sulcus, parascutal carina slightly raised. Mesoscutellum with medially distinct scutoscutellar sulcus. Mesopleuron ventrolaterally not distinctly produced. Metanotum with distinctly raised, reticulate metascutellum. Metapostnotum well developed, median length 0.88–1.21 times as long as metascutellum, dorsal surface with distinct transverse striae, median sulcus present and broad, posterior margin of metapostnotum slightly incised medially. Propodeum with distinct declivity, propodeal spiracles elongate but narrow, without raised margin; propodeal surface with fine transverse rugae. Wings: Macropterous, forewing hyaline, with two brown bands of infuscation and greyish apical wing margin, second brown band covers SMC2 and SMC3 completely. SMC3 narrow on marginal cell but slightly wider than SMC2. SMC3 broad on M, broader than SMC2. 3rs-m curved, higher than 2rs-m. Terminal abscissa of vein M reaches wing margin as spectral vein. Legs: Tarsal claws pectinate, elongate, not strongly curved, with ventral tooth that is slightly higher than claw. Tarsal plantulae present. Foretibia with distinctly elongate apical spine. Hind tibia with toothed scales slightly indicated in proximal half. Metasoma: Metasoma shiny, T1 petiolate anteriorly, metasomal terga with fine reticulation and dense short setation. S2 with deep transverse groove. Apex of metasoma with long setae.

Male, unknown.

Comments: This species shows a very similar distribution to *S. montanus*, covering Tasmania and south eastern Australia (Fig. 8G).

5.11 *Sphictostethus walteri* **n. sp.**
(Figs. 1D, H; 2L, M; 4F; 5F; 6I; 7I)

Holotype ♀: Australia, South East Queensland, Cunningham's Gap, rainforest pitfall 31B, 762 m, 1974–1975, G. B. & S. R. Monteith (QM).

Paratypes: 1 ♀, Australia, New South Wales, Mount Nardi, via Nimbin, rainforest pitfall 43A, 762 m, 1974–1975, G. B. & S. R. Monteith (QM); 2 ♀♀, Australia, Queensland, Lamington National Park, 28°13'S 153°07'E, 13.XI./3.XII.1995, Irwin (ANIC, SMNS); 1 ♀, Australia, New South Wales, Ramornie S. F. Track off T-Ridge Road, pitfall 20AG, 29°43'00"S 152°33'23"E, 4.II.–9.IV.1993, M. Gray & G. Cassis, ne NSW NPWS Survey (AM Reg. no. K240926); 1 ♂, Australia, New South Wales, Mount Tomah, Blue Mountains, 10.IV.1978, N. W. Rodd (AM Reg. no. K240943); 2 ♂♂, Australia, New South Wales, Mount Tomah, Blue Mountains, 20.IV.1978, N. W. Rodd (AM Reg. nos. K240944, K240945); 1 ♂, Australia, New South Wales, Mount Tomah, Blue Mountains, 22.IV.1977, N. W. Rodd (AM Reg. no. K240946); 1 ♂, Australia, New South Wales, Mount Tomah, Blue Mountains, 26.V.1977, G. A. Holloway (WINC); 1 ♂, Australia, New South Wales, Mount Tomah, 22.IV.1977 (SMNS).

Etymology: Named in honour of Mr Walter Krogmann (Norderstedt, Germany), the father of the first author.

Diagnosis: Female brachypterous (Fig. 4F); metapostnotum greatly enlarged, median length 3.5–3.6 times as long as metascutellum (Fig. 1H). Male subgenital plate broad, with distinctly elongate setae and submedian tubercles (Fig. 6I).

Description, female (Fig. 4F): Body length: 9.52–11.46 mm, head plus mesosoma: 4.90–6.59 mm. Colour: Head, antennae and metasoma light orange-brown, metasoma dark brown apart from apex, which is light brown. Head (Fig. 2L): Head sculpture finely punctuate, with short white setation, row of three elongate setae present near inner eye margin approximately at level of ocelli. Inner eye margin only very slightly incised, eye 1.76–1.96 times as long as wide. Malar space absent. Clypeus 2.46–2.77 times as wide as high and densely covered with short white setae, two irregular rows of elongate setae present near ventral margin, ventral clypeal margin nearly straight, only slightly emarginate medially. First flagellomere 6.85–8.64 times as long as wide and 1.29–1.32 times as long as second flagellomere. Mesosoma: Pronotum distinctly developed, laterally rounded. Mesonotum narrower than pronotum, parapsidal sulcus absent, mesoscutum with distinct and raised parascutal carina, mesoscutellum distinctly raised medially. Mesopleuron anteromedially constricted at level of median mesepisternal groove, in posterior half tuberculately produced ventrolaterally. Metanotum short, with raised metascutellum. Metapostnotum large, median length 3.5–3.6 times as long as metascutellum, dorsal surface with distinct transverse striae. Propodeum elongate, without distinct declivity, propodeal spiracles elongate but narrow, with slightly raised margin; propodeal sculpture finely punctuate and additionally with fine striae. Wings: Brachypterous, forewing very narrow with dark infuscation around SMC2. Wing venation complete, SMC3 shorter than SMC2. Legs: Tarsal claws pectinate, with distinct ventral tooth that is about as high as claw. Tarsal plantulae present. Foretibia without distinct apical spine. Hind tibia with weakly developed toothed scales. Metasoma: T1 anteriorly petiolate, without distinct setation, remaining tergites sparsely setose dorsally.

Description, male (Fig. 5F): Body length: 9.52–11.46 mm, head plus mesosoma: 4.90–6.59 mm. Colour: Head, antennae, and body light orange-brown to red brown, metasoma partly darkened dorsally. Head (Fig. 2M): Head sculpture as in female, with distinct golden setation on lower face lateral to toruli. Inner eye margin only very slightly incised, eye 1.79–2.05 times as long as wide. Malar space very short. Clypeus high, 2.26–2.38 times as wide as high and densely covered with long golden setae. First flagellomere 3.95–4.93 times as long as wide and 1.00–1.11 times as long as second flagellomere. Mesosoma: Pronotum relatively short, posterior margin deeply incised medially. Mesoscutum large, parapsidal sulcus present, mesoscutum with distinct and raised parascutal carina. Mesoscutellum distinctly raised medially. Mesopleuron tuberculately produced ventrolaterally, tubercles cone-like and more distinct than in female. Metanotum normally developed, with raised metascutellum. Metapostnotum large, median length 1.57–1.81 times as long as metascutellum, dorsal surface with distinct transverse striae. Propodeum elongate, without distinct declivity; propodeal surface reticulate in anterior third, rest of surface with distinct transverse striae. Setation of metapostnotum and propodeum restricted to lateral margin. Wings: Macropterous, forewing without infuscation, SMC3 longer and higher than SMC2. Metasoma: T1 elongate and distinctly petiolate, spiracles situated in anterior half, T1 with sparse setation dorsally and few long setae laterally, remaining tergites densely pilose. S2 with deep transverse groove. Subgenital plate (Fig. 6I) broad, with distinctly elongate setae, tubercles present submedially, tip blunt, slightly incised medially. Male genitalia (Fig. 7I) with aedeagus much shorter than parapenial lobe and digitus volsellaris. Digitus volsellaris slightly shorter than parapenial lobe. Digiti volsellares medially extended and adjacent to each other, apical portions bent inwards. Lamina volsellaris with two hooks, of which the proximal one is slightly larger. Paramere long and slender, apically with greatly elongate setae.

Comments: *Sphictostethus walteri* is distributed from south east Queensland to eastern New South Wales (Fig. 8H). This species is a rare example of a wing-reduced pompilid. From Australia there is only one other species known with brachypterous females and macropterous males, i. e. *Eremocurgus linnaei* (Pepsinae) from Western Australia (Krogmann et al. 2008).

5.12 *Sphictostethus xanthochrous* (Turner, 1915) (Figs. 2N; 3C)

Calopompilus xanthochrous Turner, 1915: Turner 1915a: 65–66.
Priocnemis xanthochrous: Turner 1915b: 334 [generic transfer].
Sphictostethus xanthochrous: Harris 1987: 64 [generic transfer]; Elliott 2007 [cat.].

Holotype ♀, Australia, South Tasmania, Mount Wellington, 1300–2300 ft, January to March, R. E. Turner (BMNH). – Other specimens examined: 1 ♀, Australia, Tasmania, West side Lake St. Clair, ca. 750 m, 25.–29.I.1980, Eucalypt-Acacia forest, window-pane, gutter trap, A. Newton, M. Thayer (SMNS); 1 ♀, Australia, Tasmania, Derwent Bridge, 29.I.1960, F. J. D McDonald (UQIC Reg. no. 91592); 1 ♀, Australia, Tasmania, Zeehan, 3.II.1925 (QM); 1 ♀, Australia, Tasmania, 9 km West by South Poatina, 41°48'S 146°52'E, 20.I.1983, I. D. Naumann & J. C. Cardale (WINC); 1 ♀, Australia, Tasmania, 10 km East-Northeast of Nunamara, 41°22'S 147°24'E, Malaise/ethanol, 12.I.–6.II.1983, I. D. Naumann & J. C. Cardale (ANIC); 1 ♀, Australia, Tasmania, 9 km West-Southwest of Derwent Bridge, 42°10'S 146°08'E, ex yellow tray, 21.I.1983, I. D. Naumann & J. C. Cardale (ANIC); 1 ♀, Australia, Tasmania, Franklin Road, 55 km East-Southeast of Queenstown, 400 m, 19.–20.II.1980, open eucalypt forest, window trap, A. Newton, M. Thayer (ANIC); 1 ♀, Australia, Tasmania, Helyer Gorge, 2.II.1967, E. F. Riek (ANIC).

Diagnosis: Female foretibia without distinctly elongate apical spine; clypeus uniformly dark brown; metapostnotum without median sulcus; antenna dark brown; fore wing yellowish, with two brown bands of infuscation and greyish apical wing margin.

Description, female (Fig. 3C): Body length: 7.20–10.55 mm, head plus mesosoma: 3.58–5.73 mm. Colour: Head, antennae, mesosoma, coxae, trochanters, and metasoma dark brown to black, rest of legs orange apart from forefemur which is dark brown in proximal half and mid femur which has brown markings proximally. Head (Fig. 2N): Head sculpture finely punctuate, with dense short, white setation, that is more conspicuous on lower face. One row of elongate setae present along upper inner eye margin. Inner eye margin slightly incised medially, eye 1.83–1.97 times as long as wide. Malar space absent. Clypeus 2.78–3.22 times as wide as high, with dense white setation and irregular row of elongate setae near ventral margin, setae arising from distinct punctures; ventral clypeal margin incised medially. First flagellomere 4.67–5.17 times as long as wide and 1.03–1.24 times as long as second flagellomere. Mesosoma: Pronotum very short, posterior margin deeply incised, surface finely punctuate. Mesonotum finely punctuate, mesoscutum with parapsidal sulcus, parascutal carina not raised. Mesoscutellum with medially distinct scutoscutellar sulcus. Mesopleuron ventrolaterally not distinctly produced. Metanotum relatively long, with distinct, slightly raised metascutellum. Metapostnotum medially slightly constricted, median length 0.67–0.81 times as long as metascutellum, dorsal surface without distinct transverse striae, median sulcus absent. Propodeum high, apically rounded, with distinct declivity, propodeal spiracles elongate but narrow, without raised margin; propodeal surface finely reticulate without transverse rugae. Wings: Macropterous, forewing yellowish, with two brown bands of infuscation and greyish apical wing margin, SMC2 completely covered by brown band,

SMC3 incompletely covered. SMC3 slightly longer and distinctly higher than SMC2. Terminal abscissa of vein M reaches wing margin as hardly visible, relict spectral vein. Legs: Tarsal claws pectinate, elongate, not strongly curved, with ventral tooth that is about as high as claw. Tarsal plantulae present. Foretibia without elongate apical spine. Hind tibia with toothed scales. Metasoma: T1 not distinctly petiolate anteriorly, metasomal terga with fine reticulation and dense short setation. S2 with shallow transverse groove. Apex of metasoma with long setae.

Male, unknown.

Comments: This species is only known from Tasmania, where it is widely distributed (Fig. 8M).

5.13 *Sphictostethus yidyam* **n. sp.**
(Figs. 1A, E; 2O, P; 4D; 5I; 6D; 7D)

Holotype ♀: Australia, North East Queensland, Millstream Conservation Park, 17°32'S 145°29'E, 1040 m, O/For. Intercept. 2116, 6.XII.1998–4.II.1999, Monteith & Cook (QM).

Paratypes: 1 ♀, Australia, North Queensland, Lake Eacham, ANIC 1091, flight intercept trap, with trough closed forest on metamorphic soil, 17°17'S 145°37'E, 29.III.–31.V.1988. D. C. F. Rentz (ANIC); 1 ♀, 1 ♂, Australia, Queensland, Wet Tropics, Mossman Gorge, 16°47'18"S 145°32'38"E, 100 m a. s. l., 15.–20.VI.2006, rainforest Malaise, ANIC Bulk Sample 2918, R. Wilson (ANIC, SMNS); 5 ♂♂, Australia, Queensland, Wet Tropics, Mossman Gorge, 16°47'15"S 145°32'17"E, 100 m a. s. l., 20.–26.VI.2006, rainforest Malaise, ANIC Bulk Sample 2936, R. Wilson (ANIC, SMNS, WINC); 1 ♂, Australia, Queensland, Wet Tropics, Mossman Gorge, 16°45'94"S 145°32'61"E, 100 m a. s. l., 20.–26.VI.2006, rainforest Malaise, ANIC Bulk Sample 2934, R. Wilson (ANIC); 1 ♂, Australia, Queensland, Wet Tropics, Mossman Gorge, 16°47'18"S 145°32'38"E, 100 m a. s. l., 17.–22.V.2005, rainforest Malaise, ANIC Bulk Sample 2864, R. Wilson (ANIC).

Specimens excluded from the type series: 1 ♂, Australia, Queensland, Cooloola National Park, rainforest, Malaise trap, IX.–X.1979, E. Dahms & G. Gordh (QM); 7 ♂♂, Australia, New South Wales, Dooragan National Park, North Brother Mountain, 450 m, subtropical rainforest, Malaise trap, 14.–28.I.1999, G. Williams (AM Reg. nos. K240864, K246242, WINC, SMNS); 1 ♂, Australia, New South Wales, vic. Breakneck Lookout, approx. 11 km South-Southwest of Taree, ex dry rainforest, 26.XII.1992–14.I.1993, G. & T. Williams (AM Reg. no. K240893); 3 ♂♂, Australia, New South Wales, Kiwarrah State Forest, near Taree Breakneck Lookout, dry rainforest, Malaise trap, 26.XII.1992–14.I.1993, G. Williams (ANIC).

Etymology: The species is named after the aboriginal name of Lake Eacham, where one of the female paratypes was collected. The species epithet is to be treated as a noun in apposition.

Diagnosis: Forewing whitish with three dark bands of infuscation (Fig. 1A); mesopleuron ventrolaterally distinctly produced (Fig. 1E); propodeum with distinct posterolateral tubercles (Fig. 1E). Female clypeus with irregular ventral clypeal margin (Fig. 2O); female foretibia without distinctly elongate apical spine. Male genitalia with digiti volsellares medially extended and adjacent to each other, apical portions bent inwards (Fig. 7D).

Description, female (Fig. 4D): Body length: 8.72–9.82 mm, head plus mesosoma: 4.64–5.55 mm. Colour: Head, antennae, mesosoma and legs dark purple, metasoma black. Head (Fig. 2O): Head sculpture finely punctuate, with very short white setation. One row of elongate setae present along upper inner eye margin. Inner eye margin slightly incised medially, eye 1.82–2.18 times as long as wide. Malar space absent. Clypeus 2.57–2.68 times as wide as high, reticulate, laterally with longer white setae, medially with short inconspicuous setation, row of elongate setae present near ventral margin, setae arising from distinct punctures; ventral clypeal margin irregular, i. e. slightly incised submedially and medially. First flagellomere 4.47–4.79 times as long as wide and 1.12–1.20 times as long as second flagellomere. Mesosoma: Pronotum very short, posterior margin deeply incised. Mesoscutum with parapsidal sulcus, parascutal carina slightly raised. Mesoscutellum with medially distinct scutoscutellar sulcus. Mesopleuron ventrolaterally distinctly produced (Fig. 1E). Metanotum long, with distinct but not raised metascutellum. Metapostnotum short, median length 0.54–0.68 times as long as metascutellum, dorsal surface with indistinct transverse striae, median sulcus absent but median area polished. Propodeum with distinct declivity, propodeal spiracles elongate but narrow, without raised margin. Propodeal surface finely transversely rugulose, propodeum posterolaterally with distinct pair of tubercles (Fig. 1E). Wings: Macropterous, forewing whitish, with three dark bands of infuscation (Fig. 4D). SMC3 about as long as, but distinctly higher than SMC2. Terminal abscissa of vein M reaches wing margin as hardly visible, relict spectral vein. Legs: Tarsal claws pectinate, elongate, not strongly curved, with distinct ventral tooth that is higher than claw. Tarsal plantulae present. Foretibia without distinct apical spine. Hind tibia with toothed scales in proximal half. Metasoma: T1 anteriorly petiolate, metasomal terga not reticulate, surface shiny with tiny punctures and few tiny setae. S2 with deep transverse groove. Apex of metasoma with long setae.

Description, male (Fig. 1A): Body length: 6.57–7.74 mm, head plus mesosoma: 3.43–4.46 mm. Colour: Head dark brown; clypeus with ventrolateral margin light brown (Fig. 2P); antennae dark brown; mesosoma red-brown, with varying degrees of melanism in the areas of pronotum, mesoscutum, lateral mesopleuron, mesoscutellum and metascutellum; legs dark red-brown; anterior three-quarters of first metasomal segment red-brown, rest of metasoma dark brown. Head (Fig. 2P): Eye 1.78–1.95 times as long as wide; face with conspicuous white setation. Malar space absent. Clypeus 0.22–0.25 times as wide as high, with conspicuous white

setation; ventral clypeal margin slightly concave medially. First flagellomere 2.60–2.88 times as long as wide and 0.79–0.85 times as long as second flagellomere. Mesosoma: Mesoscutellum distinctly raised; mesopleuron distinctly expanded laterally. Median length of metapostnotum 0.79–0.85 times as long as metascutellum. Propodeum only slightly flattened, with distinct lateral tubercles. Wings: Macropterous, forewing colouration as in female. Metasoma: Metasomal terga with punctures more distinct than in females; surface shiny, with dense short setation. S2 without deep transverse groove. Apex of metasoma without long setae. Subgenital plate (Fig. 6D) elongate, with dense long setation, tip narrowly rounded. Male genitalia (Fig. 7D) with aedeagus slightly longer than parapenial lobe. Digitus volsellaris longer than aedeagus and parapenial lobe. Digiti volsellares medially extended and adjacent to each other, apical portions bent inwards. Lamina volsellaris with two hooks, of which the distal one is larger. Paramere long and slender with long setation.

Comments: Together with *S. haoae* this species shows the northern-most distribution of the Australian *Sphictostethus* species (Fig. 8I). Specimens of both sexes are known from north east Queensland, but males from south east Queensland and New South Wales differ from the 'northern' males in head, body and wing colouration (clypeus light orange-brown, body uniformly orange-brown to light brown, wings yellowish with proximal brown band of infuscation much narrower), and in having the mesopleural extensions and propodeal tubercles less pronounced. They share a number of characters, including the conspicuous white setation on the face, the punctuation of the metasoma, same wing venation and nearly identical male genitalia (parameres just slightly shorter in the 'southern' specimens). We found the shared features more significant and decided to associate these males with *S. yidyam*, mainly to make them available in the published record. However, we decided not to include them in the type series in case future studies show them to belong to a different species.

6 Discussion

In the original description of *Sphictostethus*, Kohl (1884) used a number of morphological characters that are now not diagnostic for the genus, but rather are a result of the wing-reduction in the female of *Sphictostethus (Pompilus) gravesii*, on which the genus was based. The most useful diagnostic features given by Kohl (1884) are the cone-like expanded lateral mesopleuron ("Mesothorax vor den Mittelhüften kegelförmig ausgezogen") and the presence of toothed scales ("Hinterschienen sägezähnig") on the female hind tibia. As these characters are absent in a few Australian species, we have added a number of new features that separate Australian *Sphictostethus* from other closely related genera. Most important is vein M, which reaches the outer wing margin at least as a spectral vein (Fig. 1A). This spectral vein sometimes can be hardly traceable but is complete in *S. gravesii* (specimens in ZMHB). A complete diagnosis of the other putatively closely related genera, including *Trichocurgus* Haupt, 1937 and *Dipogon* Fox, 1897 will be published as part of a comprehensive synopsis of the Australian pompilid genera (Krogmann et al. in prep.). Harris (1987: figs. 4, 13–17) used the length and position of the premental bristles to discriminate *Sphictostethus* from *Trichocurgus* (which he treats as a subgenus of *Priocnemis*). We did not include this character into the generic diagnosis mainly for practical reasons. We could not check this character in most specimens and, to fully interpret it, manipulation of the mandibles and sometimes even removal of the head would have been necessary. A detailed study of this character system would be desirable in the future as it may be useful to define *Sphictostethus* as a whole or subgroups therein.

Sphictostethus is a rare example of a pompilid genus that shows a restricted southern hemisphere distribution that may be explained by a Gondwanan origin. This is further supported by the restriction of *Sphictostethus* to eastern Australia and Tasmania, where it largely occurs in wet sclerophyll- and rainforests that contain floral elements that are believed to be Gondwanan relics (see e. g. Hill 2004). A comprehensive dated molecular phylogenetic analysis of pompilids is required to test whether the distribution of *Sphictostethus* can best be explained by vicariance and this would require the inclusion of material from South America and New Zealand. The only other pompilid genus that shows a similar, putatively Gondwanan distribution is *Epipompilus* Kohl, which occurs in South America, Australia and New Zealand. However, the distribution of this genus differs to that of *Sphictostethus* in that it is not restricted to eastern Australia and Tasmania but occurs throughout the Australian continent. Additionally, phylogenetic studies (Pitts, pers. comm.) question whether New World and Australasian species are congeneric, which would rebut their Gondwanan origin.

Townes (1957) placed *Priocnemis montrouzieri* Williams in the subgenus *Sphictostethus* and Harris (1987) consequently considered it to be a member of the genus *Sphictostethus*. We examined the holotype of *P. montrouzieri*, as well as *P. umbrosicola* Williams, and *P. auraucariae* Williams (all specimens in BPBM) to verify their placement in *Sphictostethus*. In contrast to most species of *Sphictostethus*, the New Caledonian species lack the extension of the lateral mesopleuron. Additionally, vein M clearly terminates before the wing margin, and as we regard this feature crucial for the diagnosis of *Sphictostethus*, we follow Williams' (1945) original classification

and suggest that these species be retained in *Priocnemis* Schiødte. HARRIS (1987) also cites *Sphictostethus* as occurring in New Guinea but gives no reference or refers to material that supports this. TOWNES (1957) placed *Priocnemis pretiosa* in the subgenus *Sphictostethus*, making it the only known Nearctic species, but HARRIS (1987) transferred it to *Priocnemis* after raising *Sphictostethus* to generic rank. Based on the published record *Sphictostethus* remains restricted to the Neotropics, Australia, and New Zealand.

The male genitalia of *Sphictostethus* provide a number of characters of potential phylogenetic value. HARRIS (1987) found lateral tubercles on the subgenital plates of the males for insertion with S6 of all New Zealand *Sphictostethus* species. We found similar structures on the subgenital plates of *S. aliciae*, *S. montanus*, *S. insularis* and *S. walteri* from Australia (Fig. 6E–G, I). In *S. infandus* the tubercles are distinctly pointed (Fig. 6H), while they are slightly developed and bear small setae in the Chilean *S. gravesii*, the type species of *Sphictostethus* (Fig. 6J). In the remaining Australian species the tubercles are absent, but the subgenital plates are laterally rounded or angular (Fig. 6A–D). We found significant interspecific variation in the male genitalic morphology (Fig. 7A–J) but hardly any intraspecific variation. Therefore male genitalic characters are useful to discriminate between pompilid species and are likely to provide a number of potentially phylogenetically relevant characters.

7 References

BERTKAU, P. (1885): Insecta. – In: BERTKAU, P. & VON MARTENS, E.: Bericht über die wissenschaftlichen Leistungen im Gebiete der Entomologie während des Jahres 1884, pp. 78–238; Berlin (Nicolaische Verlags–Buchhandlung).

DALLA TORRE, C. G. DE (1897): Catalogus hymenopterorum hucusque descriptorum systematicus et synonymicus. Volumen VIII: Fossores (Sphegidae), 749 pp.; Leipzig (Engelmann).

DAY, M. C. (1988): Spider wasps. Hymenoptera: Pompilidae. Handbooks for the Identification of British Insects, vol. **VI**, Part 4, 60 pp.; London (Royal Entomological Society).

ELLIOTT, M. G. (2007): Annotated catalogue of the Pompilidae (Hymenoptera) of Australia. – Zootaxa **1428**: 1–83.

EVANS, H. E. (1973): Studies on Neotropical Pompilidae (Hymenoptera) XI. The genera of Auplopodini. – Psyche **80**: 212–226.

EVANS, H. E. (1976): A revision of spider wasps of the genus *Ctenostegus* (Hymenoptera: Pompilidae). – Australian Journal of Zoology, Supplementary Series **43**: 1–107.

FROGGATT, W. W. (1892): Catalogue of the described Hymenoptera of Australia. Part 2. – Proceedings of the Linnean Society of New South Wales (Series 2) **7**: 205–248.

GOULET, H. & HUBER, J. T. (1993): Hymenoptera of the world: An identification guide to families, 668 pp.; Ottawa (Agriculture Canada, Research Branch).

HALIDAY, A. H. (1837): Descriptions, etc. of the Hymenoptera. – In: CURTIS, J., HALIDAY, A. H. & WALKER, F.: Descriptions, etc. of the insects collected by Captain P. P. KING, R. N., F. R. S., in the survey of the Straits of Magellan. – Transactions of the Linnean Society of London **17**: 316–331.

HARRIS, A. C. (1987): Fauna of New Zealand 12. Pompilidae, 154 pp.; Wellington (DSIR Publishing).

HILL, R. S. (2004): Origins of the southeastern Australian vegetation. – Philosophical Transactions of the Royal Society B **359**: 1537–1549.

KOHL, F. F. (1884): Die Gattungen der Pompiliden. – Verhandlungen der zoologisch-botanischen Gesellschaft in Wien **34**: 33–58.

KROGMANN, L., DAY, M. C. & AUSTIN, A. D. (2008): A new spider wasp from Western Australia, with a description of the first known male of the genus *Eremocurgus* (Hymenoptera: Pompilidae). – Records of the Western Australian Museum **24**: 437–441.

ROIG-ALSINA, A. (1987): Contribucion al conocimiento de los Pepsinae sudamericanos IV. El género *Sphictostethus* Kohl (Hymenoptera, Pompilidae). – Revista de la Sociedad entomologica Argentina **44**: 277–315.

TOWNES, H. (*1957*): Nearctic wasps of the subfamilies Pepsinae and Ceropalinae. – Bulletin of the U. S. National Museum **209**: 1–286.

TURNER, R. E. (1915a): Descriptions of new fossorial wasps from Australia. – Proceedings of the zoological Society of London **85**: 41–69.

TURNER, R. E. (1915b): Family Psammocharidae. – In: MEADE-WALDO, G., MORLEY, C. & TURNER, R. E.: Notes and synonymy of Hymenoptera in the collection of the British museum. – Annals and Magazine of natural History (8) **16**: 332–335.

SMITH, F. (1868): Descriptions of aculeate Hymenoptera from Australia. – Transactions of the Royal entomological Society of London **1868**: 231–258.

WILLIAMS, F. X. (1945): The aculeate wasps of New Caledonia, with natural history notes. – Proceedings of the Hawaiian entomological Society **12**: 407–452.

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Four new species of Rhysodini (Coleoptera: Carabidae) with revised keys to *Grouvellina* Bell & Bell and the *mishmicus* group of *Rhyzodiastes* Fairmaire

Ross T. Bell & Joyce R. Bell

Abstract

Yamatosa bacca **n. sp.** (China), *Shyrodes nakladali* **n. sp.** (China), *Rhyzodiastes (Temoana) puetzi* **n. sp.** (China), and *Grouvellina nzwani* **n. sp.** (Comoro Islands) are described and illustrated. New keys for *Grouvellina* and *mishmicus* group of *Rhyzodiastes (Temoana)* Bell & Bell are provided.

Key words: Carabidae, Rhysodini, new species, keys, China, Comoro Islands.

Zusammenfassung

Yamatosa bacca **n. sp.** (China), *Shyrodes nakladali* **n. sp.** (China), *Rhyzodiastes (Temoana) puetzi* **n. sp.** (China) und *Grouvellina nzwani* **n. sp.** (Komoren) werden beschrieben und illustriert. Neue Bestimmungsschlüssel für die Gattung *Grouvellina* und die *mishmicus*-Gruppe von *Rhyzodiastes (Temoana)* Bell & Bell werden vorgestellt.

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1 Introduction

Recorded here are three additional species in the rich rhysodine fauna of western China as well as a second species of *Grouvellina* from the Comoro Islands. *Shyrodes nakladali* n. sp. is only the second species discovered in the isolated genus *Shyrodes*, the other species being *S. dohertyi* Grouvelle, 1903, from the Ruby Mines of northern Burma.

Abbreviations

CAS	California Academy of Sciences, San Francisco, CA., USA
CMNH	Carnegie Museum of Natural History, Pittsburgh, PA., USA
DEI	Deutsches Entomologisches Institut, Müncheberg, Germany
IOZ	Institute of Zoology, Chinese Academy of Sciences, Beijing, P. R. China
L/GW	Length/Greatest Width of pronotum
MSNF	Museo Zoologico "La Specola", Sezione del Museo di Storia Naturale dell'Università degli Studi di Firenze, Florence, Italy
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany

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2 Genus *Yamatosa* Bell & Bell

Yamatoa Bell, 1977.
Yamatosa Bell & Bell, 1979.

Yamatosa bacca **n. sp.**
(Figs. 1–4)

Holotype ♂: "China: N-Yunnan [c2005-16] Nujian Lisu Aut. Pref., Gongshan Co., Gaoligong Shan, side valley, 3000–3050 m, 27°47.90'N, 98°30.19'E, conif. forest with *Rhododen-*

dron, broad leaved bushes, litter, moss, dead wood, sifted along creek, & snow fields, 21-VI-2005, M. Schülke". (SMNS).

Paratypes: 1 ♂: Same data as holotype (SMNS); 3 ♂♂, 3 ♀♀: "S. China, Yunnan Prov., Pass 50 km W. of Judian, 11–13.6.2005, Oto Nakládal leg" (1 ♂, 1 ♀ Wrase Colln.; 1 ♂, 1 ♀ R. Kmeco Colln.; 1 ♂, 1 ♀ CMNH); 1 ♂: "China, Yunnan, Gongshan County, Cikai Township, 40 km W of Gongshan on Dulong Valley Road at Dabadi, 2900 m, N27.79619°/E098.51867°, 29 September 2002, Stop #HBL-2002-20, H.-B. Liang collector, Rhysodine sp. CH-02, det. D. H. Kavanaugh 2004" (IOZ); 1 ♀: "China, Yunnan, Fugong County, Lishadi Township, 10 km W of Shibali on Shibali Road, 3221 m, N27.20055°/E098.71399°, 16 August 2005, Stop #PP-3905, P. Paquin collector" (IOZ). [The last two specimens listed were returned to D. Kavanaugh at CAS and he will transfer them to IOZ].

Etymology

The word "bacca" in Latin means bead or nut, referring to the eye which is very small and projects from the marginal curve of the temporal lobe.

Diagnosis

A species similar to *Y. smetanorum* Bell & Bell but easily separated by the apparent absence of coarse punctures from the abdominal sterna and the metasternum. The abdominal pits are differently shaped and are not oblique.

Description

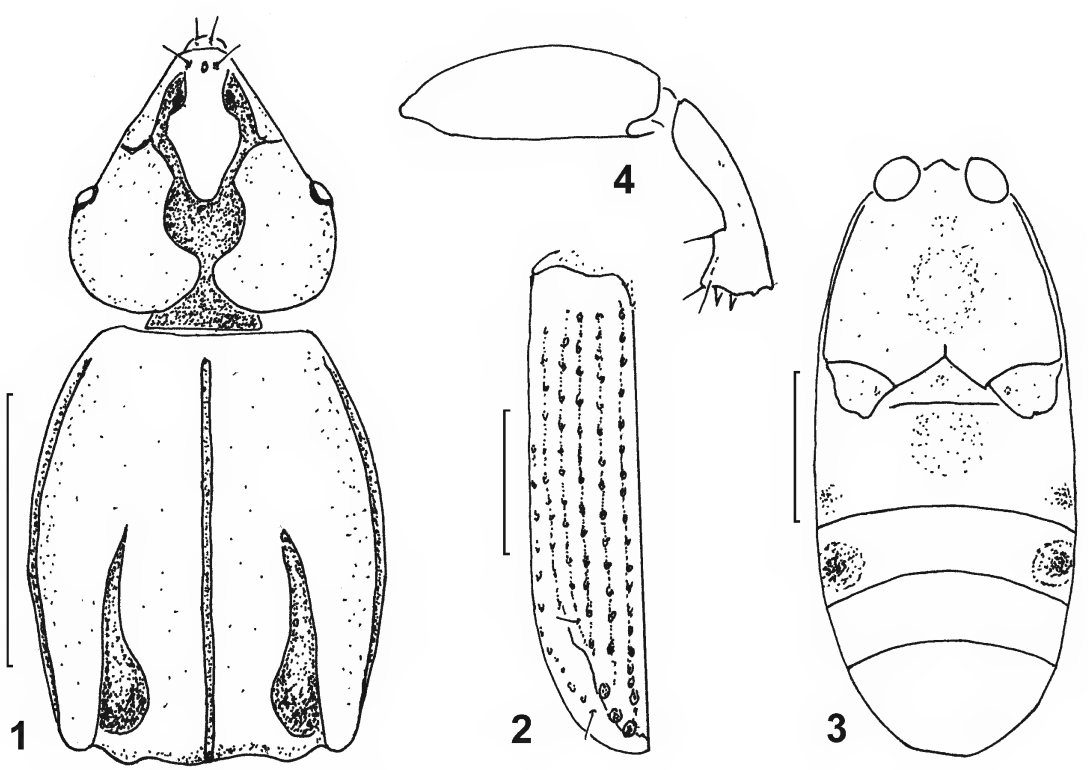
Body length 5.7–7.0 mm. Antennal segment XI obtuse, stylet absent; head cordate, sides evenly rounded, frontal grooves narrow, well-defined; eye reduced, slightly more than in *Y. smetanorum*, temporal lobes slightly separated (Fig. 1); mentum without punctures.

Pronotum (Fig. 1) with L/GW = 1.32, slightly shorter than in *Y. smetanorum*; lateral margin not sinuate near base, or slightly so; basal impression about 0.5 of length of pronotum; marginal groove nearly complete, effaced only very near anterior margin; precoxal carina absent.

Elytral setae very reduced, one near apex of stria IV and one external to apical tubercle (Fig. 2). Metasternum (Fig. 3) entirely without punctures except for extremely minute ones; same for abdominal sterna; both sexes with deep lateral pits on sternum IV (Fig. 3). Anterior femur not toothed in either sex; middle tibia of male with calcar shape similar to that of *Y. smetanorum* but smaller; calcar of metatibia sinuate (Fig. 4).

The key in Bell & Bell (2002) can be modified as follows:

10 Mentum punctate medially, ♂ with tooth on femur of anterior leg. **11**



Figs. 1–4. *Yamatosa bacca* n. sp. – **1**. Head and pronotum, dorsal view. **2**. Left elytron, dorsal view. **3**. Metasternum, abdomen ♂ or ♀. **4**. Metafemur, metatibia ♂, lateral view. – Scale: 1 mm.

– Mentum without punctures, ♂ without tooth on femur of anterior leg. **12**

12 Metasternum without coarse punctures along lateral margins; abdominal sterna not coarsely punctate; both sexes with semicircular lateral pits on sternum IV, those of ♀ larger than in ♂. ..... ***bacca* n. sp.**

– Metasternum with some coarse punctures near lateral margins; abdominal sterna coarsely punctate; both sexes with deep lateral pits on sternum IV, those of ♂ simple, those of ♀ divided by carinae into two parts. ..... ***smetanorum***

3 Genus *Shyrodes* Grouvelle

Shyrodes Grouvelle, 1903.

Shyrodes nakladali n. sp.
(Figs. 5–10)

Holotype ♂: "China, Yunnan [CH07-13], Baoshan Pref., Gaoligong Shan, E pass, 36 km SE Tengchong, 2200 m, 24°49'32"N, 98°46'06"E, decid. forest, litter, wood, fungi sifted, 31-V-2007, leg. A. Pütz" (Pütz Colln.) [to be deposited in the future at DEI].

Paratypes: 1♂: "S. China, Yunnan Prov., Gaoligong Shan Mts., Pass S.W. of Baoshan, 4–8.6.2005, Oto Nakládal leg." (Kmeco Colln.); 1♀: "China, Yunnan Province, Gaoligongshan Mountains, Baoshan Prefecture, Baoshan County, Nankang Yakou, 24°49.9'N/98°46.0'E, 2130 m, 4–7 November 1998, Stop #98-129C, D. H. Kavanaugh, C. E. Griswold, C.-L. Long, R. Li & H.-X. He collectors" (IOZ) [forwarded by D. Kavanaugh, CAS, to IOZ].

Etymology

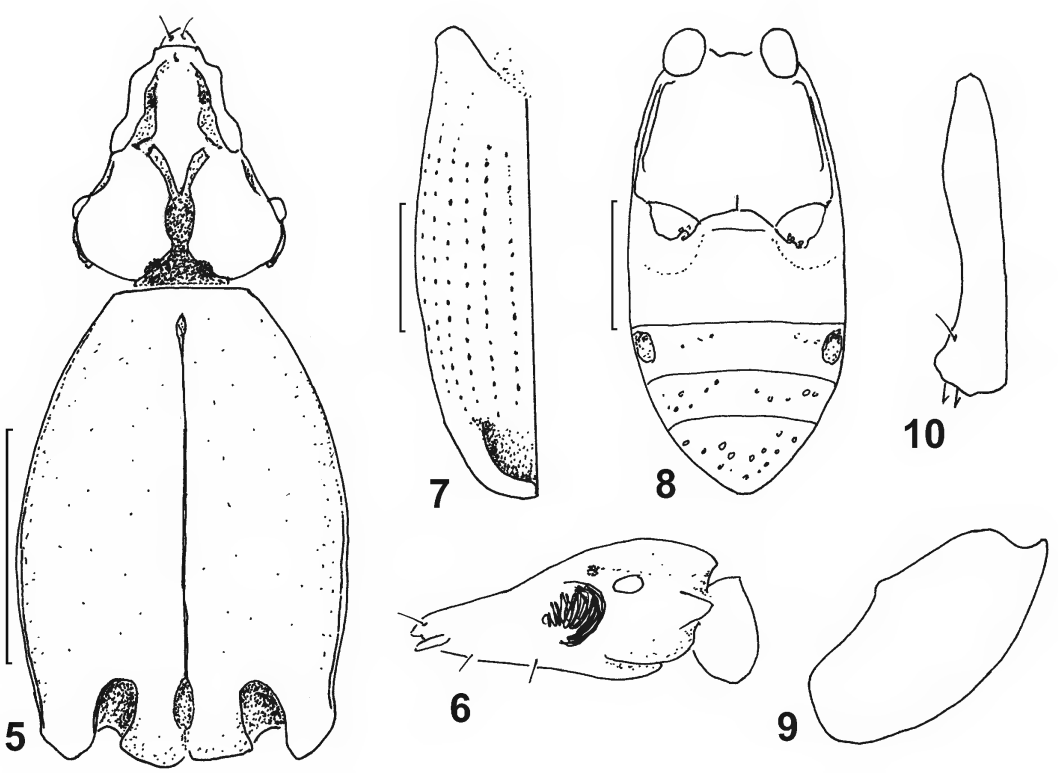
Named for the collector Oto Nakládal, who has brought back this important discovery from western China. It is only the second species assigned to this genus.

Diagnosis

Similar to *S. dohertyi*, but lacking a discal striole, and the ventral tooth on the anterior femur is barely suggested.

Description

Body length 6.0–6.8 mm. Antenna with short, flattened apical stylet, rings of minor setae present on segments V–X, basal setae absent; head (Fig. 5) with frontal grooves deeper than in *S. dohertyi*, not reaching antennal grooves; frontal space small; medial angles of temporal lobes obtuse, narrowly separated; frontal grooves deeply incised, anteriorly connected to postclypeal grooves by much shallower portion; anterior part of head (Fig. 6)



Figs. 5–10. *Shyrodes nakladali* n. sp. – **5**. Head and pronotum, dorsal view. **6**. Head, left lateral view. **7**. Left elytron, dorsal view. **8**. Metasternum, abdomen ♂ or ♀. **9**. Anterior femur ♂, lateral view. **10**. Metatibia ♂, lateral view. – Scale: 1 mm.

more elongate than in *S. dohertyi*, mentum more elongate, length of mentum (from gular tubercle to median tooth) divided by greatest width = 1.80, compared to 1.66 for *S. dohertyi*; temporal lobes with obtuse hind angles; eye protruded but even smaller than in *S. dohertyi*, less than one half diameter of first antennal segment.

Pronotum (Fig. 5) more elongate than in *S. dohertyi*, L/GW 1.37 (compared to 1.33 for *S. dohertyi*); marginal groove fine, nearly complete; basal impressions small, deep, open posteriorly, without discal striole; hind angles turned, forming obtuse prominences overhanging basal impressions; no setae on prothorax.

Elytra (Fig. 7) deeply impressed towards scutellum, anterior to oblique line running medially from humerus; stria I impressed, closely, finely punctate; striae II–VII represented by rows of very fine punctures; striae not extended into depressed post-scutellar area, nor to region of humeral angle. Metasternum (Fig. 8) with lateral carina extended 0.6 of its length. Abdominal sterna III–V (Fig. 8) each with one transverse row of coarse punctures; sternum VI with scattered coarse punctures; male and female with lateral pits on sternum IV, those of female deeper. Male with only minute vestige of femoral ventral tooth (Fig. 9) present, none on female; calcar of middle tibia scarcely evident, that of hind tibia (Fig. 10) distinct though small.

4 Genus *Rhyzodiastes*, subgenus *Temoana* Bell & Bell

Rhyzodiastes Fairmaire, 1895.
Temoana Bell & Bell, 1985.

Rhyzodiastes (Temoana) puetzi n. sp.
(Figs. 11–15)

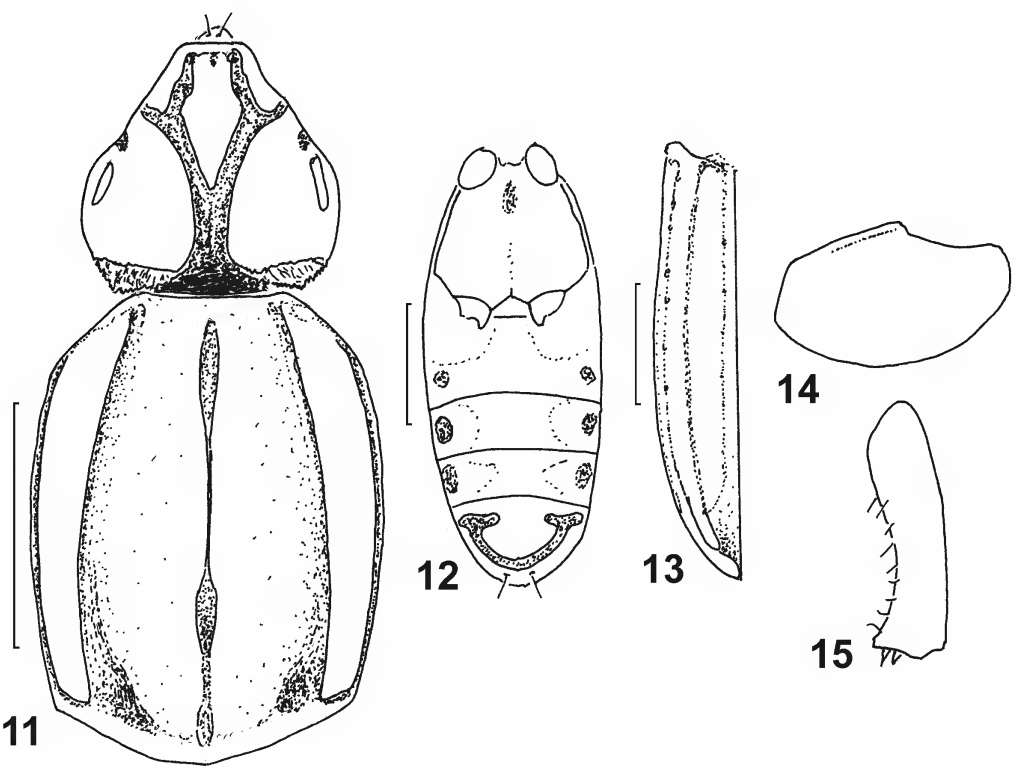
Holotype ♂: "China Yunnan [CHO7-14], Baoshan Pref., Gaoligong Shan, 33 km SE Tengchong, 2100–2200 m, 24°51'22"N, 98°45'36"E, decid. forest, litter, wood, fungi sifted, 31-V-2007, leg. A. Pütz" (Pütz Colln.). [A. Pütz notes that at some future date he would like to deposit his holotype at DEI].

Paratypes: 1 ♀: Same data as holotype (Wrase Colln.); 1 ♂: "China, Yunnan Province, Gaoligongshan Mountains, Baoshan Prefecture, Baoshan County, Nankang Yakou, 24°49.9'N/98°46.0'E, 2130 m, 4–7 November 1998, Stop #98-129, D. H. Kavanaugh, C. E. Griswold, C-L. Long, R. Li & H.-X. He collectors" (IOZ) [transferred by D. Kavanaugh, CAS].

Non-type material: 1 ♀: "S. China, Yunnan pr., 65 km E. Tengshong, humid forest, 2200–2350 m, 21–22.V.2003. leg. S. Murzin" (Brustel Colln.). [Note: Presumably Tengshong is the same place as Tengchong and is just a variant transcription.]

Etymology

Named for the collector, Andreas Pütz, another adventurous collector, who has brought back an additional species of the unexpectedly rich rhysodine fauna of western China.



Figs. 11–15. *Rhyzodiastes (Temoana) puetzi* n. sp. – **11**. Head and pronotum, dorsal view. **12**. Metasternum, abdomen ♂ or ♀. **13**. Left elytron, dorsal view. **14**. Profemur ♂, lateral view. **15**. Metatibia ♂, lateral view. – Scale: 1 mm.

Diagnosis

A member of the *waterhousei* group, most similar to *R. preorbitalis* Bell & Bell. Both lack a median metasternal suture and transverse grooves on abdominal sterna III–V. In *R. puetzi* there is a transverse groove on each side of sternum VI, joined laterally to the marginal groove of that sclerite.

Description

Body length 5.8–7.9 mm. Antennal stylet short, acute; antennal segments VI–XI with basal setae; head (Fig. 11) as broad as long; median lobe of head longer than in *R. preorbitalis*, extended to level of eyes; posterior margin of temporal lobe fringed with pollinosity; orbital groove absent; preorbital pit present; eye narrow, crescentic, longer than in *R. preorbitalis*.

Pronotum (Fig. 11) shorter and broader than in *R. preorbitalis* (L/GW = 1.35), sides curved, widest near middle, apex narrowed, base less narrowed; median groove fine, linear; both median pits displaced towards middle of pronotum, posterior median pit at end of long, narrow depression; inner carina sloped gradually to paramedian groove; basal impressions broad, deep, triangular, tapered anteriorly into paramedian groove; outer carina rather broad at middle, less than half width of inner carina; marginal groove fine, complete, visible in dorsal view.

Elytra (Fig. 13) rather short, sides nearly parallel; sutural stria fine, becoming faint near base, finely punctate; parasutural stria much deeper, faintly punctate; interval III distinctly convex; intratubercular stria complete, impressed; marginal stria interrupted anteriorly. Abdominal sterna III–V (Fig. 12) with lateral pits, those of sternum IV enlarged in both sexes; sterna III–V without transverse sulci; sternum VI with widely separated transverse sulci, these each joined to apices of submarginal sulcus; sternum VI with one pair of apical setae. Male with low ventral carina on proximal half of anterior femur (Fig. 14), ended in an abrupt angle; calcars small (Fig. 15).

The species key of the *mishmicus* group of *Rhyzodiastes (Temoana)* in Bell & Bell (1985) can be substituted for couplets 7 and 8 as follows:

7. Metasternum with complete median sulcus..... **8**
7'. Metasternum without median sulcus. **8.1**
8. Abdominal sterna III–V with transverse sulci..... ***waterhousei***
8'. Abdominal sterna III–V without transverse sulci..... ***mishmicus***
8.1. Abdominal sterna III–V with transverse sulci..... ***orestes***
8.1'. Abdominal sterna III–V without transverse sulci..... **8.2**
8.2. Abdominal sternum VI with transverse sulci usually joined to marginal groove..... ***puetzi* n. sp.**
8.2'. Abdominal sternum VI without transverse sulci..... ***preorbitalis***

5 Genus *Grouvellina* Bell & Bell

Grouvellina Bell & Bell, 1978.

Grouvellina nzwani n. sp.
(Figs. 16–20)

Holotype ♂: "Is. Comore, Anjouan, Nioumakele I., 1988, legit R. Viossat" (MSNF).

Paratypes: 4 ♀♀: Same data as holotype (MSNF).

Etymology

"Nzwani" is the local name for the island usually called "Anjouan".

Diagnosis

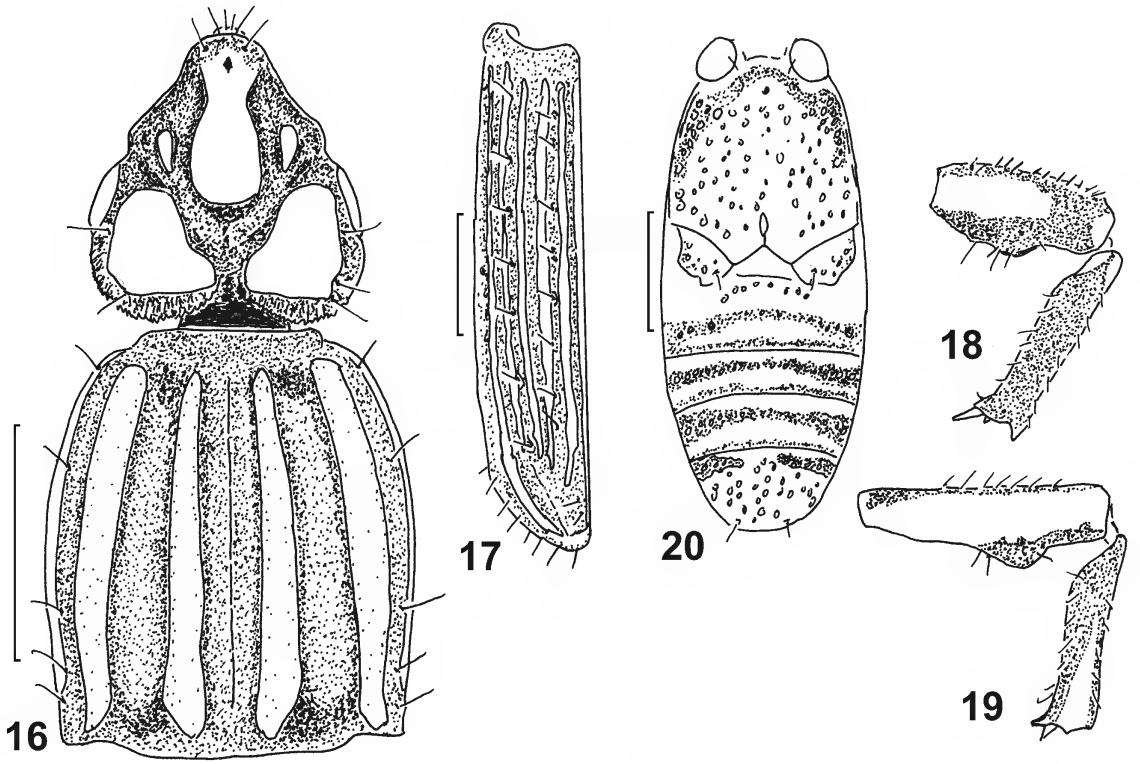
A species of *Grouvellina*, tracing to couplet 6 in our key to species (Bell & Bell 1979) and closest to *G. hexadon* (Bell & Bell 1985). The most obvious differences are in the male. In this species, the ventral tooth on the femur of the second leg is low and rounded, while in *G. hexadon*, it is sharp and prominent.

Description

Body length 5.9–8.0 mm. Antennal stylet short, acute; tufts of minor setae present on antennomeres V–X; basal setae V–X present; antennomeres II–X with both basal rings of pollinosity. Head (Fig. 16) approximately as wide as long, labrum with four setae; median head lobe short, broad; antennal lobes with broad borders and small glabrous bosses; antennal and postantennal grooves deep; median margin of temporal lobe broadly curved, lateral and basal margins of temporal lobes broadly margined with pollinosity; 2–3 temporal setae.

Pronotum (Fig. 16) much less elongate than in *G. hexadon*, L/GW = 1.22 (L/GW in *G. hexadon* = 1.35); pronotal carinae narrower than pronotal grooves, inner carina broadest near base, outer carina broadest near apex; marginal groove relatively broad; five marginal setae; prosternum with distinct precoxal carina in extensive precoxal pollinose area.

Elytra (Fig. 17) elongate, parallel-sided; striae deep, as broad as intervals; striae pollinose, very coarsely punctate, giving undulating margins to intervals; base of interval II elevated, forming small tooth; humeral angle elevated, tooth-like; stria II with 8 setae, stria IV with 7 setae, stria VII with about 8 setae. Metasternum (Fig. 20) entirely coarsely punctate, pollinose along anterior lateral margins, pollinosity broadened at anterior lateral angle. Abdominal sterna (Fig. 20) each with continuous pollinose strips; sternum VI coarsely punctate, with anterior lateral pollinose transverse grooves widely separated medially. Male with small ventral tooth on front femur, minute tooth on front tibia; middle femur (Fig. 18) with slight ventral swelling; hind femur (Fig. 19) with distinct ventral



Figs. 16–20. *Grouvellina nzwani* n. sp. – **16**. Head and pronotum, dorsal view. **17**. Left elytron, dorsal view. 18. Mesofemur, mesotibia ♂. **19**. Metafemur, metatibia ♂. **20**. Metasternum, abdomen ♂ or ♀. – Scale: 1 mm.

swelling. Female with ventral tooth on front femur but front tibia without tooth; female with slight ventral swellings on middle and hind femora; male with acutely pointed calcars on middle and hind tibiae (Fig. 19) (that of hind tibia of *G. hexadon* is blunt).

Species key

This is a revision of an earlier key found in Bell & Bell (1979).

1 Outer carina of pronotum both complete and glabrous; marginal carina linear in dorsal view.... **2**
– Outer carina not both complete and glabrous; marginal carina broader, appearing as an additional ridge lateral to outer carina.... **16**
2 Anterior femur with ventral tooth in both sexes; anterior tibia of male with tooth on inner side.... **3**
– Anterior femur and tibia without teeth.... **10**
3 Eye in contact with glabrous area of temporal lobe, orbital groove incomplete. – Madagascar.... ***montana***
– Eye isolated from temporal lobe by pollinose orbital groove.... **4**
4 Distinct glabrous parafrontal boss present.... **5**
– Parafrontal boss absent.... **9**
5 Pronotum widest at base. – Madagascar.... ***cuneata***
– Pronotum widest anterior to base.... **6**
6 Postmentum pollinose; antenna with only antennomere II with pollinose band. – Madagascar.... ***gigas***
– Postmentum glabrous; antenna with pollinose bands on antennomeres II–X.... **7**
7 Anterior end of elytral interval II not projected. – Madagascar.... ***tubericeps***
– Anterior end of interval II projected anteriorly as small tooth.... **8**
8 Middle femur of male with acute ventral tooth; pronotum elongate, L/GW = 1.22; hind calcar blunt. – Comores.... ***hexadon***
– Middle femur of male with rounded ventral swelling; pronotum not elongate, L/GW = 1.35; hind calcar acute. – Comores.... ***nzwani* n. sp.**
9 Four or five temporal setae; striae II and IV each with about ten setae; mentum short, its lateral margins parallel. – Madagascar.... ***hova***
– One temporal seta; stria II with two, stria IV with four or five setae; mentum longer, with its lateral margins converging anteriorly. – Madagascar.... ***janaki***
10 Labrum with four setae.... **11**
– Labrum with two setae.... **13**
11 Precoxal carina absent; elytral intervals carinate; base of interval II not projected; body length 9–10 mm. – Madagascar.... ***ranavalona***
– Precoxal carina present; elytral intervals not carinate; base of interval II projected anteriorly as small tooth; body length 5–7 mm.... **12**
12 Parafrontal boss present; two temporal setae; four lateral setae on pronotum. – Madagascar.... ***edentata***
– Parafrontal boss absent; three temporal setae; pronotum with two lateral setae. – Madagascar.... ***cooperi***

13 Median lobe of head long, narrow, its sides parallel. **14**
– Median lobe shorter, broader, its sides not parallel..... **15**
14 Pronotal carina not wider than pronotal grooves; pronotum more elongate, L/GW = 1.35; pronotum widest near middle; five temporal setae; antennomeres I–IV with pilosity. – Madagascar..... ***radama***
– Pronotal carinae distinctly wider than grooves; pronotum shorter, L/GW = 1.30; pronotum widest anterior to middle; three temporal setae; antennomeres I–X with pilosity. – Madagascar..... ***bulirschi***
15 Tufts of minor setae on antennomeres V–X; medial angle of temporal lobe rounded; four lateral setae on pronotum. – Madagascar..... ***descarpentriesi***
– Tufts of minor setae on antennomeres VI–X; medial angle of temporal lobe acute; one lateral seta on pronotum. – Madagascar..... ***divergens***
16 Outer carina of pronotum entirely pollinose or with very small glabrous area; outer groove of pronotum abbreviated both anteriorly and posteriorly; temporal lobe largely pilose; two or three temporal setae, arising within temporal pilosity; five pronotal setae. – Madagascar. ..... ***grouvellei***
– Outer carina of pronotum entirely glabrous, abbreviated posteriorly; outer groove of pronotum complete, joining inner groove at basal impression; each temporal seta concealed within isolated tuft of pilosity; two pronotal setae..... **17**
17 Both sexes with ventral tooth on anterior femur; tufts on temporal lobe arranged in curve following posterolateral margin. – Madagascar..... ***dentipes***
– Anterior femur without ventral tooth; tufts of temporal lobe in transverse rows, one or two in anterior row, two or three in posterior row. – Madagascar..... ***cinerea***

6 References

Bell, R. T. (1977): Ergebnisse der Bhutan-Expedition 1972 des Naturhistorischen Museums in Basel (Coleoptera: Fam. Rhysodidae). – Entomologica basiliensis **2**: 151–158.

Bell, R. T. & Bell, J. R. (1978): Rhysodini of the world. Part I. A new classification of the tribe, and a synopsis of *Omoglymmius* subgenus *Nitiglymmius* new subgenus (Coleoptera: Carabidae or Rhysodidae). – Quaestiones entomologicae **14**: 43–88.

Bell, R. T. & Bell, J. R. (1979): Rhysodini of the world. Part II. Revisions of the smaller genera (Coleoptera: Carabidae or Rhysodidae). – Quaestiones entomologicae **15**: 377–446.

Bell, R. T. & Bell, J. R. (1985): Rhysodini of the world. Part IV. Revisions of *Rhyzodiastes* Fairmaire and *Clinidium* Kirby, with new species in other genera (Coleoptera: Carabidae or Rhysodidae). – Quaestiones entomologicae **21**: 1–172.

Bell, R. T. & Bell, J. R. (2002): Two new species of Rhysodini (Coleoptera: Carabidae) with revised keys to *Yamatosa* Bell & Bell and *Omoglymmius (Pyxiglymmius)* Bell & Bell. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **636**: 7 pp.

Fairmaire, L. (1895): Descriptions de quelques Coléoptères de Madagascar. – Annales de la Société entomologique de Belgique **39**: 8–40.

Grouvelle, A. (1903): Synopsis des Rhysodides et descriptions d'espèces nouvelles. – Revue d'Entomologie **22**: 85–148.

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On the Staphylinidae (Coleoptera) of Iran. II. New species and additional records, with special reference to the Paederinae, Xantholinini, and Aleocharinae

Volker Assing

Abstract

Seventeen species are (re-)described and illustrated, fourteen of them are new to science: *Rugilus penicillatus* **n. sp.** (N-Iran), *R. frischi* **n. sp.** (Gilan), *R. armeniacus* (Coiffait, 1970), *Leptacinus mirus* **n. sp.** (N-Iran), *Pronomaea denigrata* **n. sp.** (Azarbayjan-e Gharbi), *Silusa (Stenusa) brevipes* **n. sp.** (North Tehran), *Acrotona ochricollis* (Scheerpeltz, 1963), *Drusilla puetzi* **n. sp.** (Mazandaran), *D. subsplendens* **n. sp.** (Gilan), *Tetralaucopora syriaca* (Saulcy, 1865), *Cousya planicollis* **n. sp.** (Esfahan), *C. mirabilis* **n. sp.** (Semnan), *Oxypoda (Podoxya?) cuneiceps* **n. sp.** (Kerman), *O. (P.?) longiuter* **n. sp.** (Azarbayjan-e Gharbi), *O. (Sphenoma) complicata* **n. sp.** (Iran: Azarbayjan-e Gharbi; Turkey: Erzurum), *O. (Bessopora) frischi* **n. sp.** (N-Iran), and *Aleochara (Xenochara) serrulata* **n. sp.** (Mazandaran). Two names are revalidated: *Rugilus tauricus* (Rougemont, 1988), previously a synonym of *R. rossii* (Zanetti, 1977), and *Xantholinus martensi* Bordoni, 1983, previously a synonym of *X. crassicornis* Hochhuth, 1851. The sexual characters of *Rugilus tauricus*, *R. rossii*, *R. iranicus* (Coiffait, 1981), *R. longicollis* (Fauvel, 1900), *Xantholinus martensi*, *Gyrophaena korbi* Strand, 1939, *G. strictula* Erichson, 1839, and *Oxypoda (Baeoglena) caucasica* Bernhauer, 1902 are illustrated. *Oxypoda vicina* Kraatz, 1858, previously attributed to the subgenus *Podoxya* Mulsant & Rey, 1875, is moved to the subgenus *Sphenoma* Mannerheim, 1830. Numerous species are reported, among them 39 first records from Iran and one each from Iraq, Georgia, and Uzbekistan. The presence of some doubtfully recorded species in Iran is confirmed. The distributions of twelve species are mapped.

Keywords: Staphylinidae, Iran, Turkey, Uzbekistan, Iraq, taxonomy, descriptions, new species, new records, revalidations, new subgeneric placement, distribution.

Zusammenfassung

Siebzehn Arten werden beschrieben bzw. redeskribiert und abgebildet: *Rugilus penicillatus* **n. sp.** (N-Iran), *R. frischi* **n. sp.** (Gilan), *R. armeniacus* (Coiffait, 1970), *Leptacinus mirus* **n. sp.** (N-Iran), *Pronomaea denigrata* **n. sp.** (Azarbayjan-e Gharbi), *Silusa (Stenusa) brevipes* **n. sp.** (North Tehran), *Acrotona ochricollis* (Scheerpeltz, 1963), *Drusilla puetzi* **n. sp.** (Mazandaran), *D. subsplendens* **n. sp.** (Gilan), *Tetralaucopora syriaca* (Saulcy, 1865), *Cousya planicollis* **n. sp.** (Esfahan), *C. mirabilis* **n. sp.** (Semnan), *Oxypoda (Podoxya?) cuneiceps* **n. sp.** (Kerman), *O. (P.?) longiuter* **n. sp.** (Azarbayjan-e Gharbi), *O. (Sphenoma) complicata* **n. sp.** (Iran: Azarbayjan-e Gharbi; Türkei: Erzurum), *O. (Bessopora) frischi* **n. sp.** (N-Iran) und *Aleochara (Xenochara) serrulata* **n. sp.** (Mazandaran). Zwei Namen werden revalidiert: *Rugilus tauricus* (Rougemont, 1988), bisher Synonym von *R. rossii* (Zanetti, 1977) und *Xantholinus martensi* Bordoni, 1983, vorher Synonym von *X. crassicornis* Hochhuth, 1851. Die Sexualmerkmale von *Rugilus tauricus*, *R. rossii*, *R. iranicus* (Coiffait, 1981), *R. longicollis* (Fauvel, 1900), *Xantholinus martensi*, *Gyrophaena korbi* Strand, 1939, *G. strictula* Erichson, 1839 und *Oxypoda (Baeoglena) caucasica* Bernhauer, 1902 werden abgebildet. *Oxypoda vicina* Kraatz, 1858, bisher in der Untergattung *Podoxya* Mulsant & Rey, 1875, wird in die Untergattung *Sphenoma* Mannerheim, 1830 gestellt. Zahlreiche Nachweise werden gemeldet, darunter 39 Erstnachweise für den Iran und jeweils einer für den Irak, Georgien und Usbekistan. Das Vorkommen einiger bislang noch nicht sicher nachgewiesener Arten im Iran wird bestätigt. Die Verbreitung von zwölf Arten wird anhand von Karten illustriert.

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1 Introduction

At present, very little is known about the staphylinid fauna of Iran. Disregarding the Scydmaeninae, which had been considered a distinct family until they were recently attributed to the Staphylinidae as a subfamily (Grebennikov & Newton 2009), only approximately 500 species have been recorded from Iran so far (Assing 2007a). Based on the zoogeographic, topographic, and ecological diversity of this country, however, its fauna can be expected to comprise several thousand species of Staphylinidae. The much better studied staphylinid fauna of Italy, for example, includes some 2,700 species and subspecies (Assing 2009h).

Most of the previous records were reported in the context of – at least primarily – taxonomic papers, particularly revisions and more or less additive species descriptions (see references in Assing 2007a); articles with a faunistic focus are rare. Very recently, however, several papers were published dealing with staphylinid faunas of particular regions and habitats (Ghahari et al. 2009a–b, Sakenin et al. 2008a–d). Generally speaking, such a trend would be highly appreciated. Unfortunately, however, there are considerable doubts regarding the status of the records. The authors do not mention who identified the species, although many of them can be diagnosed only by few specialists or based on type studies. Also, numerous records are undoubtedly erroneous, since they are far outside the range of the respective species. In consequence, until they have been revised, the records listed in these papers should be disregarded for the time being.

The present paper is primarily based on material recently collected in several field trips conducted by Johannes Frisch (Berlin) and Sayeh Serri (Tehran) in 2006–2009, as well as one by Andreas Pütz (Eisenhüttenstadt) in 2008. Unsurprisingly, an examination of this material not only yielded numerous new country records, but also several undescribed species and additional records of zoogeographic interest. Records and species descriptions of Othiini, some paederine genera (e. g., *Lobrathium* Mulsant & Rey, 1878, *Medon* Stephens, 1833, *Pseudomedon* Mulsant & Rey, 1878, *Sunius* Stephens, 1829, *Leptobium* Casey, 1905, *Achenium* Leach, 1819) and some aleocharine genera (e. g., *Geostiba* Thomson, 1858, *Leptusa* Kraatz, 1856) have been – or will be – dealt with in the context of generic revisions (Assing 2009c–g, 2010, in prep.).

Acknowledgements

My sincere thanks are extended to the colleagues mentioned in the material section for the loan of material under their care, to Andreas Pütz also for the gift of some holotypes from his material. Benedikt Feldmann proof-read the manuscript.

2 Material and methods

The material referred to in this study is deposited in the following public institutions and private collections:

cAss	author's private collection
cFel	private collection B. Feldmann, Münster
cPüt	private collection A. Pütz, Eisenhüttenstadt
cSch	private collection M. Schülke, Berlin
cSha	private collection A. Shavrin, Irkutsk
HMIM	Hayk Mirzayans Insect Museum, Tehran (S. Serri)
IRSNB	Institut royal des Sciences naturelles de Belgique, Bruxelles (Y. Gérard)
MNHNP	Muséum national d'Histoire naturelle, Paris (A. Taghavian)
MNHUB	Museum für Naturkunde der Humboldt-Universität, Berlin (J. Frisch, J. Willers)
NMP	National Museum of Natural History, Praha (J. Hájek)
TAU	National Museum of Natural History, Tel Aviv University (A. Freidberg, via B. Feldmann)

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena) with a drawing tube. For the photographs a digital camera (Nikon Coolpix 995) was used.

Head length was measured from the anterior margin of the frons to the posterior margin of the head (Paederinae, Xantholinini) or from the anterior margin of the clypeus to the posterior margin of the head (Aleocharinae), elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra. The following abbreviations are used for the measurements, which are given in mm: EL = length of elytra; HL = head length; HW = head width; ML = length of aedeagus; PL = length of pronotum; PW = width of pronotum; TaL = length of metatarsus; TiL = length of metatibia; TL = body length from apex of mandibles to apex of abdomen.

The terminology of the anatomy of the spermatheca is based on De Marzo (2007).

The maps were generated using the online generic mapping tool (GMT) of the Geomar website at www.aquarius.ifm-geomar.de/omc.

Labels of type material are cited in their original spelling and language, except for the following adaptations according to the general format requirements of the journal: names of persons (except authors of species) in small capitals, scientific names of genera and species in italics, dates with the months always in Roman numbers.

3 Results

3.1 Micropeplinae

Micropeplus tesserula Curtis, 1828

Material examined

Iran: **Mazandaran**: 1 ex., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. Pütz (cPüt).

Comment

This widespread Palaearctic species has been reported also from North America and the neotropics (Herman 2001). The above specimen represents the first record from Iran.

Micropeplus caspius Reitter, 1885

Material examined

Iran: **Mazandaran**: 4 exs., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°35'E, 1460 m, small stream, 6.VI.2008, leg. Pütz (cPüt, cAss); 1 ex., Tonekabon county, 4.5 km SW Khanian, Sehezar forest, 36°33'N, 50°50'E, 940 m, leaf litter sifted, 5.VI.2008, leg. Pütz (cPüt).

Comment

This species was previously known only from Azerbaijan (Herman 2001, Reitter 1885). The above material represents the first records from Iran.

3.2 Pseudopsinae

Pseudopsis sulcata Newman, 1834

Material examined

Iran: **Mazandaran**: 1 ex., Nur county, W Baladeh, 36°15'N, 51°27'E, 2950 m, stream, sifted, 1.VI.2008, leg. Pütz (cPüt).

Comment

The previously known distribution of *P. sulcata* extended from the Western Mediterranean (Iberian Peninsula, Northwest Africa) eastwards to Turkey, Cyprus, and Lebanon (Herman 2001). The above specimen represents a new country record.

3.3 Omaliinae

Phloeostiba plana (Paykull, 1792)

Material examined

Iran: **Mazandaran**: 1 ex., Sari county, Mohammadabad, 1 km W Afra Chal, 36°14'N, 53°14'E, 520 m, leaf litter sifted, 30.V.2008, leg. Pütz (cPüt); 2 exs., Sari county, Mohammadabad, 2.2 km NE Bendela, 36°04'N, 53°10'E, 1530 m, beech forest, 30.V.2008, leg. Pütz (cPüt, cAss); 1 ex., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. Pütz (cPüt).

Comment

Phloeostiba plana has a trans-Palaearctic distribution (Herman 2001, Smetana 2004), but was previously unknown from Iran.

Acidota crenata (Fabricius, 1793)

Material examined

Iran: **Mazandaran**: 1 ex., Nur county, W Baladeh, 36°15'N, 51°27'E, 2950 m, stream, sifted, 1.VI.2008, leg. Pütz (cPüt).

Comment

According to Herman (2001) and Smetana (2004), *A. crenata* has a trans-Palaearctic distribution. The above specimen represents the first record from Iran.

3.4 Oxytelinae

Deleaster dichrous (Gravenhorst, 1802)

Material examined

Iran: **Mazandaran**: 1 ex., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°35'E, 1460 m, small stream, 6.VI.2008, leg. Pütz (cPüt).

Comment

The species is widespread in the Holarctic region. It was recorded from Iran by Fauvel (1871).

3.5 Paederinae

Domene stilicina (Erichson, 1840)

Material examined

Iran: **Lorestan**: 3 exs., Mahmudvand env., Khorram Abad, 30.IV.2007, leg. Anistschenko (cSha); 1 ex., 20 km N Pol-e-Dokhtar prov., Babo-Zeyd, 1.–2.V.2007, leg. Anistschenko (cAss).

Comment

Domene stilicina is widespread in the Eastern Mediterranean eastwards to Iran, from where it was recently reported for the first time (Assing 2007a).

Platydomene stoeckleini (Koch, 1937)

Material examined

Iran: **Lorestan**: 1 ex., 55 km N Andimeshk, Sar-Takht, 3.–4.V.2007, leg. Anistschenko (cSha). – **Kerman**: 2 exs., 3 km E pass Mahan-Sirch, 30°12'N, 57°26'E, 2430 m, 26.IV.2007, leg. Frisch & Serri (MNHUB); 1 ex., road Baft–Rabor, 10 km N Bezenjan, 29°20'N, 56°39'E, 2510 m, 4.V.2007, leg. Frisch & Serri (cAss).

Comment

The distribution of *P. stoeckleini*, which is confined to Iraq and Iran, was recently mapped by Assing (2007a).

Tetartopeus stylifer (Reitter, 1909)

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., N Takab, 8 km E Takht-e-Soleyman, 36°36'N, 47°18'E, 2210 m, 7.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex., 10 km S Ziveh, 37°11'N, 44°53'E, 1810 m, 1.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex. [teneral], pass 25 km W Mahabad, 36°45'N, 45°32'E, 2080 m, 2.IX.2008, leg. Frisch & Serri (MNHUB). – **Kordestan**: 2 exs., 27 km SW Saqqez, 2 km SW Mir Deh, 36°08'N, 46°02'E, 1600 m, 3.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 1 ex., pass 21 km E Sanandaj, 35°20'N, 47°09'E, 2100 m, 5.IX.2008, leg. Frisch & Serri (MNHUB).

Comment

This species was first reported from Iran by Assing (2004); for additional records see Assing (2007a).

Lobrathium lederi (Eppelsheim, 1884)

Material examined

Iran: **Gilan**: 3 exs., Rasht county, Elburz mts., 29 km S Rasht, 37°01'N, 49°36'E, 140 m, sifted, 6.VI.2008, leg. Pütz (cPüt, cAss). – **Mazandaran**: 2 exs., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. Pütz (cPüt); 1 ex., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°35'E, 1460 m, small stream, 6.VI.2008, leg. Pütz (cAss); 1 ex., Chalus county, Elburz mts., 10 km SE Abbasabad, 36°39'N, 51°11'E, 280 m, leaf litter sifted, 4.VI.2008, leg. Pütz (cPüt).

Comment

This species was previously known only from Azerbaijan and the Russian South European territory (Smetana 2004). The above specimens represent the first records from Iran.

Lobrathium farsicum Assing, 2007

Material examined

Iran: **Lorestan**: 2 exs. [1 teneral], 55 km N Andimeshk, Sar-Takht, 3.–4.V.2007, leg. Anistschenko (cSha); 4 exs. [1 teneral], 20 km N Pol-e-Dokhtar prov., Babo-Zeyd, 1.–2.V.2007, leg. Anistschenko (cSha, cAss). – **Kohgiluyeh & Boyerahmad**: 1 ex., 20 km SW Yasuj, 10 km SE Sepidor, 5.–6.V.2007, leg. Anistschenko (cAss). – **Kerman**: 1 ex., road Baft–Rabor, 10 km N Bezenjan, 29°20'N, 56°39'E, 2510 m, 4.V.2007, leg. Frisch & Serri (MNHUB).

Comment

The known distribution of this recently described species is confined to southwestern Iran; for a map see Assing (2007d).

Lobrathium pravum Assing & Schülke, 2002

Material examined

Iran: **Kordestan**: 4 exs., 27 km SW Saqqez, 2 km SW Mir Deh, 36°08'N, 46°02'E, 1600 m, 3.IX.2008, leg. Frisch & Serri (MNHUB, cAss).

Comment

This species was originally described from Turkey and later also reported from Iraq (Assing 2007d, Assing & Schülke 2002). The above specimens represent the first record from Iran.

Micrillus testaceus (Erichson, 1840)

Material examined

Iran: **Razavi Khorasan**: 1 ex., Sah Jahan mts., Mareshk, 36°48'N, 59°33'E, 1800 m, 26.V.2006, leg. Frisch & Serri (MNHUB).

Comment

According to a recent revision (Assing 2008b), *Micrillus testaceus* is the most widespread species of the genus and distributed in the south of the Western Palaearctic region, but was unknown from Iran.

Pseudobium iranicum Boháč 1988

Material examined

Iran: **North Khorasan**: 1 ex., Bojnurd, Hesar Garmkhan, Surak, 37°40'N, 57°25'E, 1010 m, 3.VI.2006, leg. Serri & Frisch (HMIM); 1 ex., road Ghouchan to Shiravan, 24 km S Faruoj, Garmab, 37°03'N, 58°07'E, 1680 m, 1.VI.2006, leg. Serri & Frisch (cAss); 1 ex., road Qarloq–Raz, 33 km NNW Qarloq, Yekehshakh, 37°40'N, 57°25'E, 3.VI.2006, leg. Frisch & Serri (MNHUB).

Comment

The known distribution of this species is confined to Iran. A distribution map is provided by Assing (2007e). For additional records from Iran see Assing (2007a).

Pseudobium cypriacum Jarrige, 1949

Material examined

Iran: **Chaharmahal & Bakhtiari**: 1 ex., road Meymand–Semirom, NE Meymand, 31°14'N, 51°18'E, 1840 m, 10.V.2007, leg. Frisch & Serri (MNHUB). – **Esfahan**: 4 exs., 20 km SW Semirom, 31°19'N, 51°26'E, 2190 m, 11.V.2007, leg. Frisch & Serri (MNHUB, cAss); 3 exs., 40 km SW Semirom, 31°15'N, 51°24'E, 2080 m, 11.V.2007, leg. Frisch & Serri (MNHUB). – **Kerman**: 2 exs., Qohrud mts., W Korin, Kuh-e-Lalehzar,

2800 m, 11.–12.V.2007, leg. ANISTSCHENKO (cSha, cAss); 4 exs., road Bardsir–Baft, 10 km SE Qal'eh Askar, 29°28'N, 56°43'E, 2760 m, 6.V.2007, leg. FRISCH & SERRI (MNHUB); 38 exs., road Bardsir–Baft, Qal'eh Askar, 29°30'N, 56°38'E, 2750 m, 3.V.2007, leg. FRISCH & SERRI (MNHUB, cAss); 1 ex., road Bardsir–Sirjan, 45 km SW Bardsir, 29°51'N, 56°06'E, 2540 m, 2.V.2007, leg. FRISCH & SERRI (MNHUB); 2 exs., 30 km E Rabor, 2 km to Bagkoyeh, 29°19'N, 57°10'E, 2660 m, 5.V.2007, leg. FRISCH & SERRI (MNHUB, cAss).

Comment

The known distribution of this species is confined to Turkey, Cyprus, and Iran, from where it was recently reported for the first time (ASSING 2007e).

Pseudobium richteri (Scheerpeltz, 1961)

Material examined

Iran: **Kerman**: 1 ex., Kuhpaye, 30°29'N, 57°19'E, 1800 m, 29.IV.2007, leg. FRISCH & SERRI (MNHUB).

Comment

Pseudobium richteri has become known only from Iran and Afghanistan; for a map see ASSING (2007e).

Astenus immaculatus Stephens, 1833

Material examined

Iran: **Gilan**: 1 ex., Rudbar county, 7 km NW Bararu, 36°49'N, 49°38'E, 850 m, 7.VI.2008, leg. A. PÜTZ (cPüt).

Comment

This species is widespread in the Western Palaearctic region. Its previously known distribution extended eastwards to Azerbaijan and Turkey (SMETANA 2004). The above male represents the first record from Iran.

Rugilus rossii (Zanetti, 1977) and *R. tauricus* (Rougemont, 1988) (Figs. 1–11)

Comment

Rugilus rossii was originally described as a distinct species, based on material from central and southern Italy (ZANETTI 1977), and subsequently treated as a subspecies of *R. rufipes* (Germar, 1836) by COIFFAIT (1984). Several years later, GUSAROV (1991) placed *R. tauricus* (Rougemont, 1988), which had been described from southern Turkey, in synonymy with *R. rossii* stating that the aedeagus was identical, regarded the latter as a distinct species again, and reported it also from northern Iran. Thus, *R. rossii* was previously recorded from central and southern Italy, southern Turkey, and northern Iran (see also SMETANA 2004), a remarkably discontinuous and somewhat implausible distribution. *Rugilus tauricus* was subsequently treated as a valid name by ASSING (2005a), but the name has never been formally revalidated.

A comparative study of material from southern Italy (*R. rossii*), southern Anatolia (*R. tauricus*), and northern Iran (see following sections) revealed that, indeed, the morphology of the aedeagus is highly similar. However, the shape of the ventral process and other morphological features are slightly and constantly different. Additional differences were found in the shape and chaetotaxy of the male sternites VII and VIII, suggesting that they all represent different, albeit very closely related species. Similarly slight differences have been observed also between the widespread *R. rufipes* and *R. lesbius* Assing, 2005 from Lesbos and western Anatolia.

Rugilus tauricus is distinguished from *R. rossii* by the following characters: body of slightly larger size; posterior margin of male sternite VII broadly concave (*R. rossii*: almost truncate); sternite VIII with deep and broad, almost V-shaped posterior excision (*R. rossii*: excision smaller and U-shaped); aedeagus larger, approximately 1.15 mm (*R. rossii*: approximately 1.0 mm); ventral process of aedeagus less strongly bent in lateral view, apically shorter, differently shaped, and with much shorter filiform ventral appendix; subapical dorsal tooth-like projections of ventral process more slender and more acute. For illustrations of the primary and secondary sexual characters of *R. tauricus* and *R. rossii* see Figs. 1–11.

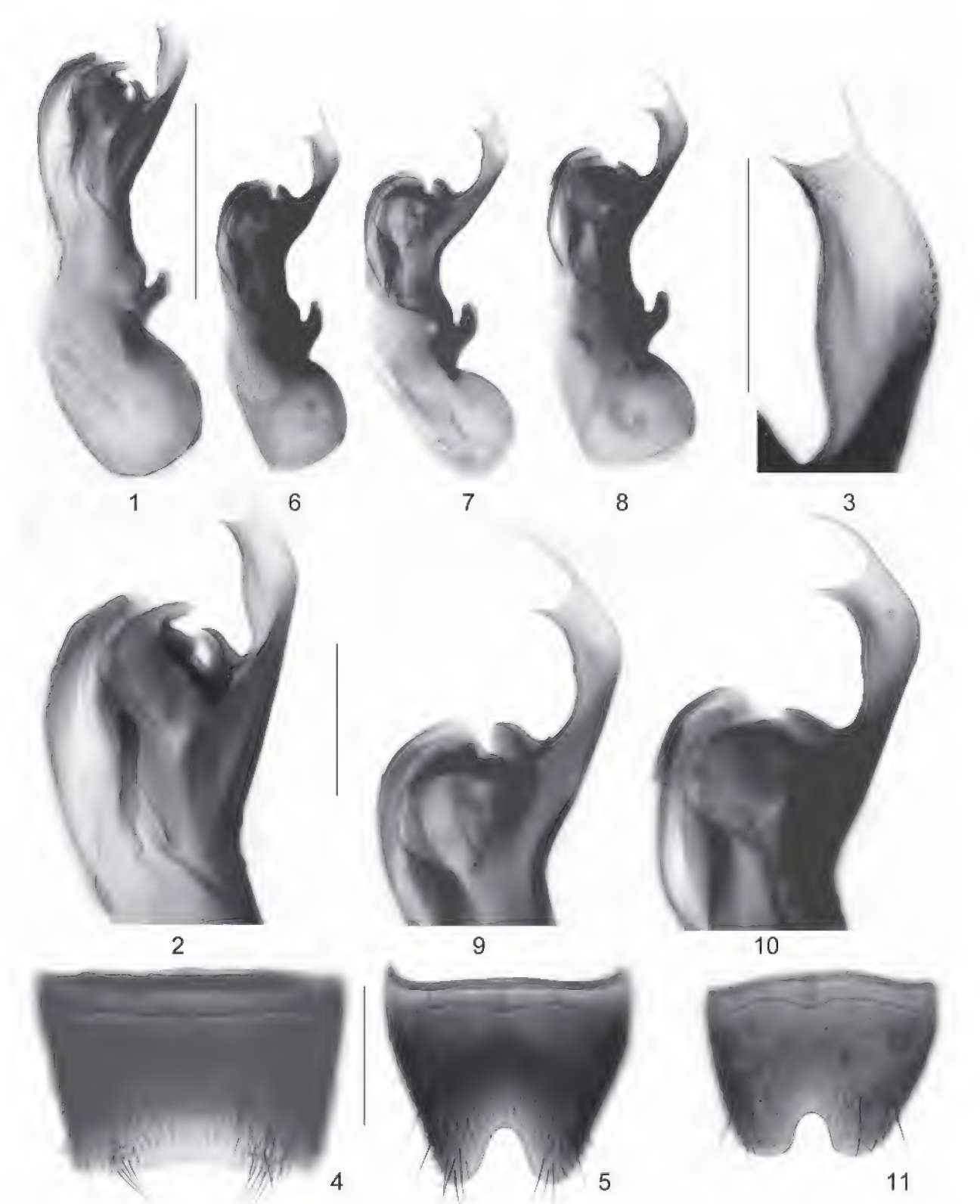
In conclusion, *R. tauricus* is regarded as a distinct species and formally revalidated; its confirmed distribution is confined to southern Anatolia. *Rugilus rossii* is endemic to central and southern Italy, and consequently absent from the Iranian fauna. The material from northern Iran is represented by two distinct species (see the descriptions below).

Rugilus penicillatus **n. sp.** (Figs. 12–22, 36)

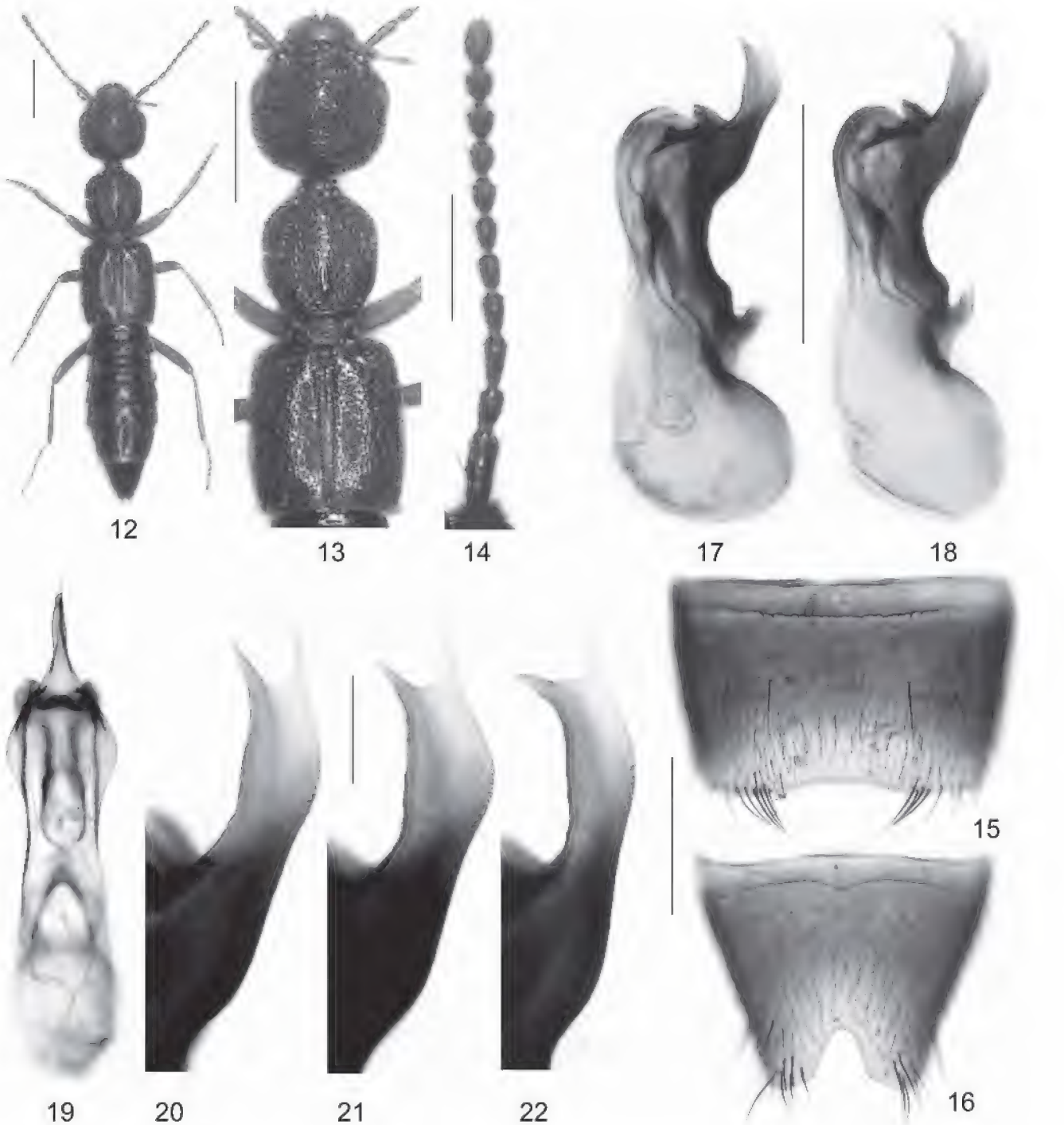
Type material

Holotype ♂ [slightly teneral]: "Iran, Razavi Khorasan Prov., 27 km SW Chanaran: SW Frizi, 1690 m (Binalud Mts), N36°27'38" E058°56'45", 29.V.2006, lg. FRISCH & SERRI / Holotypus ♂ *Rugilus penicillatus* sp. n. det. V. ASSING 2008" (MNHUB).

Paratypes: 5 exs. [all slightly teneral]: same data as holotype (MNHUB, cAss); 17 exs.: "Iran, Prov. Mazandaran [IR08-23], Ramsar County, Mohammadabad, Elburz Mts., N-Slope, Eshkatechal, small stream, 36°50'53.0"N, 50°34'64.4"E [recte: 36°50.53'N, 50°34.644'E], 1458 m, 06.VI.2008, leg. A. PÜTZ" (cPüt, cAss); 2 exs.: "Iran, Prov. Mazandaran [IR08-24], Ramsar County, Mohammadabad, Elburz Mts., N-Slope, Eshkatechal, small stream, sifted, 1055 m, 36°51'14.2"N, 50°33'22.0"E [recte: 36°51.142'N, 50°33.22'E], 06.VI.2008, leg.



Figs. 1–11. *Rugilus rossii* (Zanetti) (1–5) and *R. tauricus* (Rougemont) (6–11). – **1**, **6–8**. Aedeagus in lateral view. **2**, **9**, **10**. Apical portion of aedeagus in lateral view. **3**. Apical portion of ventral process of aedeagus in lateral view. **4**. Male sternite VII. **5**, **11**. Male sternite VIII. – Scale bars: 0.5 mm (1, 4–8, 11), 0.2 mm (2, 9, 10), 0.1 mm (3).



Figs. 12–22. *Rugilus penicillatus* n. sp. – **12**. Habitus. **13**. Forebody. **14**. Antenna. **15**. Male sternite VII. **16**. Male sternite VIII. **17**, **18**. Aedeagus in lateral view. **19**. Aedeagus in ventral view. **20–22**. Ventral process of aedeagus in lateral view. – Scale bars: 1.0 mm (12, 13), 0.5 mm (14–19), 0.1 mm (20–22).

A. Pütz" (cPüt, cAss); 3 exs.: "Iran, Prov. Mazandaran [IR08-22], Tonekabon County, Elburz Mts., N-Slope, 4.5 km SW Khanian, Sehezar forest, leaves debris, sifted, small stream, 942 m, 05.VI.2008, 36°32'61.7"N, 50°49'89.2"E [recte: 36°32.617'N, 50°49.892'E], leg. A. Pütz" (cPüt, cAss); 5 exs.: "Iran, Prov. Mazandaran [IR08-09], Babol County, Elburz Mts., N-Slope, 2 km SW Firuz Jah, 839 m, small stream, 36°10'66.0"N, 52°38'90.1"E [recte: 36°10.66'N, 52°38.901'E], 31.V.2008, leg. A. Pütz" (cPüt, cAss); 3 exs., "Iran, Prov. Mazandaran [IR08-17], Chalus County, Elburz Mts., N-slope, 7 km N Makarud, small stream, *Fagus* forest, 1245 m, 36°35'64.9"N, 51°09'55.4"E [recte: 36°35.649'N, 51°09.554'E], 03.VI.2008, leg. A. Pütz" (cPüt, cAss); 1 ♀: "Iran, Prov. Mazandaran [IR08-21], Chalus County, Elburz Mts., N-slope, 10 km SE Abbasabad, leaves debris, sifted, 36°38'82.4"N, 51°10'44.1"E [recte: 36°38.824'N, 51°10.441'E], 282 m, 04.VI.2008, leg. A. Pütz" (cPüt); 1 ♀: "Iran, Prov. Mazandaran [IR08-01A], Sari County, Mohammadabad, Elburz Mts., N-Slope, 2,2 km NE Bendela, 1533 m, 36°04'06.6"N, 53°09'57.8"E [recte: 36°04.066'N, 53°09.578'E], *Fagus* forest, leaves debris, sifted, 30.V.2008, leg. A. Pütz" (cPüt); 1 ♀: "Iran, Prov. Mazandaran [IR08-04A], Sari County, Mohammadabad, Elburz Mts., N-Slope, 1 km W Afra Chal, 36°14'11.9"N, 53°13'61.0"E [recte: 36°14.119'N, 53°13.61'E], 520 m, small stream, leaves sifted, 30.V.2008, leg. A. Pütz" (cPüt); 1 ♀: "Iran, Mazandaran Province, 20 km SW Pol-e Sefid: 2 km NE Allahband, 920 m, N 36°03'04" E 052°57'03", 08.VI.2006, lg. Frisch & Serri" (MNHUB); 3 ♀♀: "Iran, Mazandaran Province, 6 km E Kiyasar: Jalaledinkola, 1350 m, N 36°12'03" E 053°35'06", 09.VI.2006, lg. Frisch & Serri" (MNHUB, cAss); 2 ♀♀: "Iran, Golestan Province, 28 km S Ramiyan, 1530 m, N 36°51'43" E 055°14'15", 06.VI.2006, lg. Frisch & Serri" (MNHUB, cAss).

Etymology

The specific epithet (Latin, adjective: with brushes) refers to the presence of pronounced clusters of long black and stout setae on the male sternites VII and VIII.

Description

Habitus as in Fig. 12. Measurements (in mm) and ratios (range, arithmetic mean; n = 16): HL: 1.03–1.21, 1.11; HW: 1.10–1.28, 1.18; PW: 0.88–1.03, 0.95; PL: 0.95–1.15, 1.04; EL: 0.93–1.13, 1.05; TiL: 1.06–1.19, 1.09; TaL: 0.80–0.95, 0.87; ML: 0.97–1.04, 1.00; TL: 6.1–8.0, 7.1; HW/HL: 1.04–1.12, 1.06; PW/HW: 0.76–0.84, 0.80; PL/PW: 1.06–1.15, 1.10; EL/PL: 0.90–1.07, 1.01; TiL/TaL: 1.16–1.36, 1.26.

Coloration: head, pronotum, and abdomen blackish-brown to blackish; pronotum brown to dark-brown; legs yellowish-brown to brown; antennae reddish to reddish-brown.

Head (Fig. 13) moderately transverse (see ratio HW/HL); punctation coarse, very dense, areolate, sometimes partly confluent; interstices reduced to narrow ridges; eyes large and bulging, of somewhat variable size, usually approximately as long as postocular region and approximately half as long as distance between posterior margin of eyes and neck (or slightly longer) in dorsal view. Antenna as in Fig. 14.

Pronotum distinctly narrower than head (see ratio PW/HW) and weakly oblong (see ratio PL/PW); punctation coarse, dense, areolate, and partly confluent; midline impunctate in posterior half (Fig. 13).

Elytra approximately 1.20–1.25 times as wide as pronotum and of rather variable length, on average approximately as long as pronotum (see ratio EL/PL); punctation moderately dense, rather shallow, and often somewhat ill-defined; interstices glossy (Fig. 13). Hind wings fully developed. Legs rather slender (see measurements and ratio TiL/TaL).

Abdomen approximately 0.85–0.90 times as wide as elytra; tergites III–VI near anterior margins with coarse punctation, remainder of dorsal surface with fine and dense punctation.

♂: sternite VI unmodified; posterior margin of sternite VII weakly concave, on either side with cluster of several long black and stout setae (Fig. 15); sternite VIII posteriorly with almost V-shaped and moderately large excision, on either side of the excision with several long black and stout setae (Fig. 16); aedeagus approximately 1.05 mm long, ventral process of distinctive shape (Figs. 17–22).

Comparative notes

Based on the external morphology and the male sexual characters, the new species undoubtedly refers to the *R. rufipes* group. Among the species of this group, it is most similar to *R. tauricus*, from which it is separated by smaller average size, the smaller and less deep posterior excision of the male sternite VIII, the stouter setae on either side of this excision, the smaller aedeagus (*R. tauricus*: approximately 1.15 mm), and by the shape of the ventral process of the aedeagus (distinctly bisinuate, apex differently shaped, subapical dorsal projections broader), and by the apical internal structures of the aedeagus. The new species is separated from *R. rossii* from Italy by the broadly concave posterior margin of the male sternite VII, the larger and differently shaped posterior excision of the male sternite VIII, as well as by the morphology of the aedeagus (shape of ventral process and of apical internal structures). For illustrations of the aedeagus of *R. tauricus* and *R. rossii* see Figs. 1–11. For illustrations of the male genitalia of other Western Palaearctic congeners see Coiffait (1984), Rougemont (1988), and Assing (2005a).

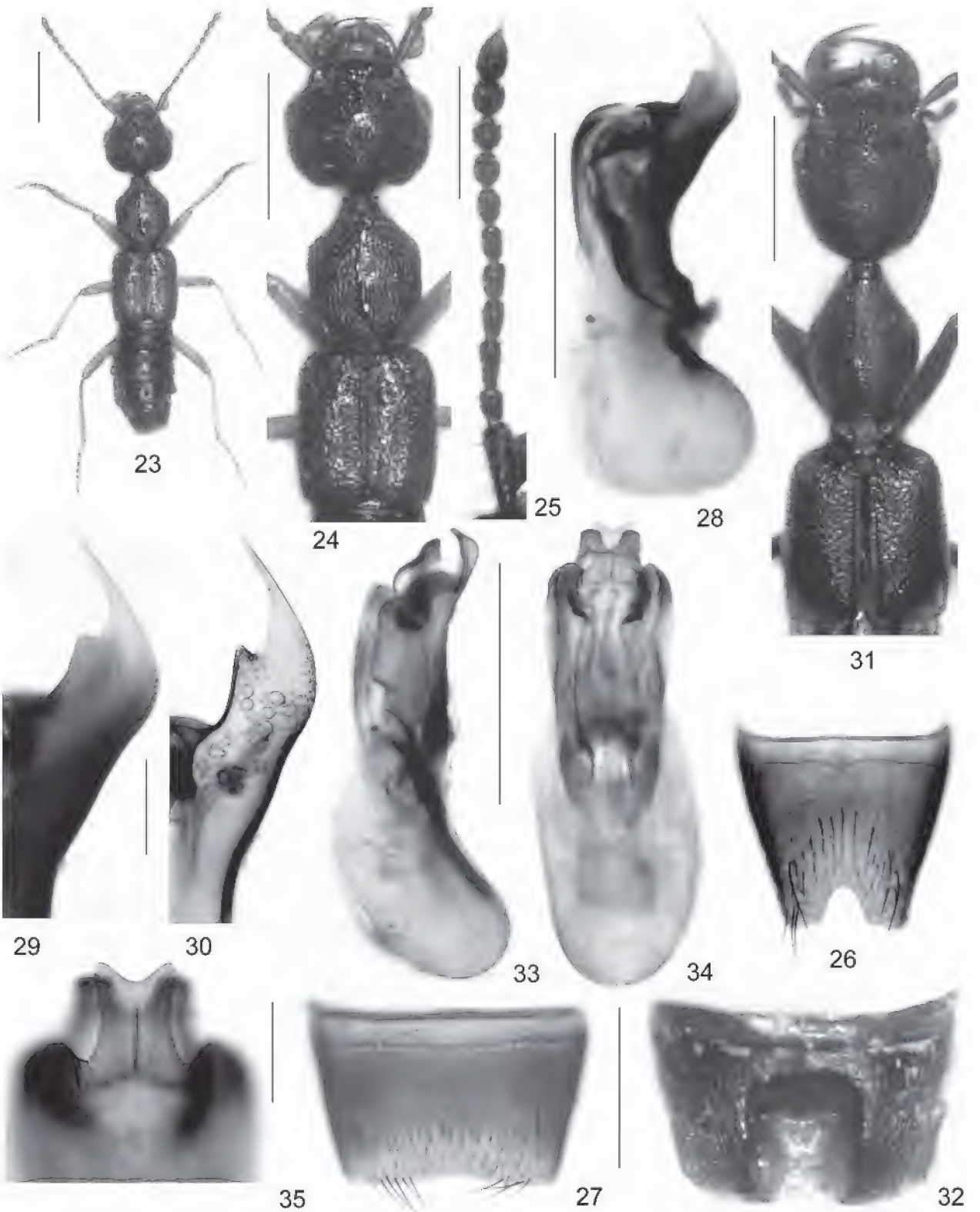
Distribution and bionomics

This species is apparently widespread in northern Iran, from western Mazandaran to Razavi Khorasan province (Fig. 36). The material was collected on banks of rivers and streams and sifted from forest leaf litter at altitudes of 520–1690 m. Several specimens collected at the end of May are teneral.

Rugilus frischi **n. sp.**
(Figs. 23–30, 36)

Type material

Holotype ♂ [slightly teneral]: "Iran, Gilan province, Rudbar: Barrehsar, 1080 m, N36°47'03" E049°45'48",



Figs. 23–35. *Rugilus frischi* n. sp. (23–30) and *R. iranicus* (Coiffait) (31: female from Iran; 32–35: male from Georgia). – **23**. Habitus. **24**, **31**. Forebody. **25**. Antenna. **26**. Male sternite VIII. **27**, **32**. Male sternite VIII. **28**, **33**, **34**. Aedeagus in lateral and ventral view. **29**, **30**. Ventral process of aedeagus in lateral view. **35**. Apical portion of ventral process of aedeagus in ventral view. – Scale bars: 1.0 mm (23, 24, 31), 0.5 mm (25–28, 32–34), 0.1 mm (29, 30, 35).

30.VII.2005, leg. Frisch & Serri / Holotypus ♂ *Rugilus frischi* sp. n. det. V. Assing 2008" (MNHUB).

Paratypes: 3 exs.: "Iran, Gilan [IR08-29], Fuman County, Tales Mts., N-Slope, Masuleh–Khalkhal road, 4 km NW Masuleh, leaves debris, sifted, 1404 m, 37°10'34.8"N, 48°58'76.6"E [recte: 37°10.348'N, 48°58.766'E], 08.VI.2008, leg. A. Pütz" (cPüt, cAss); 1 ex.: "Iran, Prov. Gilan [IR08-28], Fuman County, Tales Mts., N-Slope, below Masuleh, sifted, small stream, pools, 688 m, 37°09'69.0"N, 49°01'60.8"E [recte: 37°09.69'N, 49°01.608'E], 8.VI.2008, leg. A. Pütz" (cPüt); 8 exs. [partly teneral]: "Iran, Prov. Gilan [IR08-27], Rasht County, Elburz Mts., N-Slope, 29 km S Rasht, sifted, 37°00'49.4"N, 49°36'30.9"E [recte: 37°00.494'N, 49°36.309'E], 140 m, 7.VI.2008, leg. A. Pütz" (cPüt, cAss); 5 exs.: "Iran, Prov. Gilan [IR08-26], Rudbar County, Elburz Mts., N-Slope, 7 km NW Bararu, sifted, 851 m, 36°48'82.5"N, 49°37'60.9"E [recte: 36°48.825'N, 49°37.609'E], 7.VI.2008, leg. A. Pütz" (cPüt, cAss).

Etymology

The species is dedicated to Johannes Frisch (MNHUB), who collected not only the holotype of this species, but also numerous additional staphylinids treated in the present paper.

Description

Habitus as in Fig. 23. Measurements (in mm) and ratios (range, arithmetic mean; n = 17): HL: 1.03–1.18, 1.10; HW: 1.09–1.27, 1.18; PW: 0.86–1.00, 0.95; PL: 0.97–1.10, 1.04; EL: 0.91–1.07, 0.99; TiL: 1.04–1.18, 1.13; TaL: 0.79–0.98, 0.90; ML: 1.06–1.12, 1.09; TL: 6.0–8.0, 7.7; HW/HL: 1.05–1.10, 1.08; PW/HW: 0.78–0.82, 0.80; PL/PW: 1.05–1.12, 1.09; EL/PL: 0.88–1.00, 0.95; TiL/TaL: 1.19–1.36, 1.27.

Coloration: head blackish; pronotum and abdomen blackish-brown; elytra brown; legs dark yellowish; antennae reddish.

Head (Fig. 24) moderately transverse (see ratio HW/HL); punctation coarse, very dense, and areolate; interstices reduced to narrow ridges, in anterior median area slightly wider; eyes large and bulging, longer than postocular region and almost as long as distance between posterior margin of eyes and neck in dorsal view. Antenna as in Fig. 25.

Pronotum distinctly narrower than head (see ratio PW/HW) and weakly oblong (see ratio PL/PW); punctation coarse, dense, areolate, and partly confluent; midline impunctate only in posterior half, small relict of impunctate area present also near anterior margin (Fig. 24).

Elytra approximately 1.25 times as wide, and at suture on average slightly shorter than pronotum (see ratio EL/PL); punctation moderately dense, rather shallow, and rather fine; interstices on average approximately as wide as diameter of punctures and glossy (Fig. 24). Hind wings apparently fully developed. Legs rather slender (see measurements and ratio TiL/TaL).

Abdomen slightly narrower than elytra; tergites III–VI near anterior margins with coarse punctation, remainder of dorsal surface with fine and dense punctation.

♂: sternite VI unmodified; posterior margin of sternite VII weakly concave, on either side with cluster of several long black setae (Fig. 27); sternite VIII posteriorly with almost U-shaped excision, on either side of the excision with several long black setae (Fig. 26); aedeagus with ventral process of distinctive shape (Figs. 28–30).

Comparative notes

Based on the external morphology and the male sexual characters, the new species is closely related to *Rugilus rufipes* and allied species (*R. tauricus*, *R. rossii*, *R. lesbius*). It is distinguished from other species of this group

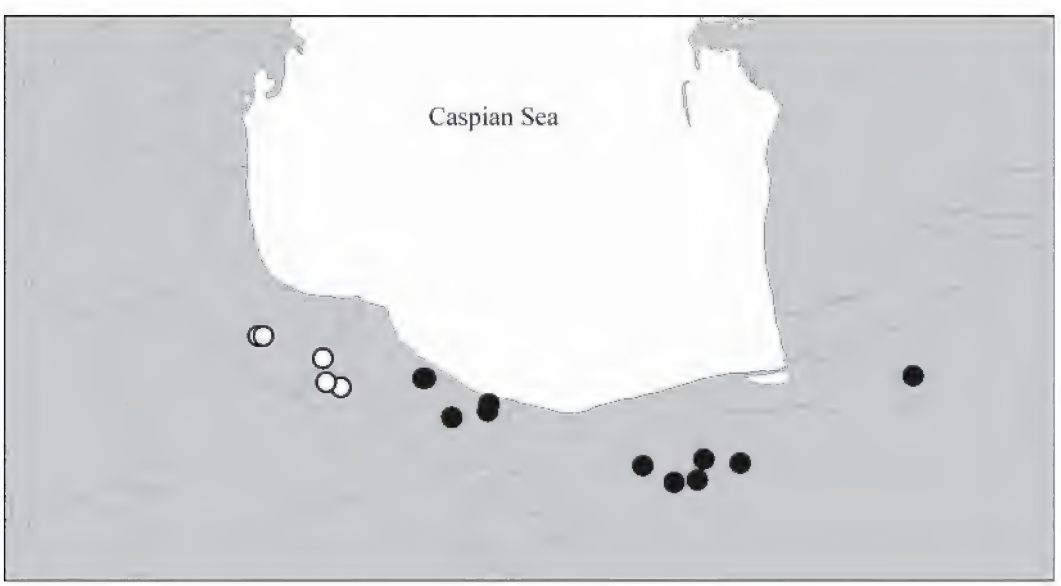


Fig. 36. Distribution of *Rugilus frischi* n. sp. (○) and *R. penicillatus* n. sp. (●) in northern Iran.

by less pronounced posterior angles of the head, relatively larger eyes, a more transverse head, and by the male sexual characters, above all by the distinctive shape of the ventral process of the aedeagus. For illustrations of the aedeagi of the Western Palaearctic representatives of the *R. rufipes* group see COIFFAIT (1984), ROUGEMONT (1988), and ASSING (2005a). *Rugilus frischi* is reliably distinguished from *R. penicillatus* only based on the morphology of the aedeagus, particularly the distinctive shape of the ventral process in lateral view.

Distribution and bionomics

The species was found in several localities in Gilan province, northwestern Iran (Fig. 36). The type specimens were mostly collected from moist leaf litter, usually on or near banks of streams and pools at a wide range of altitudes (140–1400 m). Some of the beetles collected in June and July are somewhat teneral.

Rugilus iranicus (Coiffait, 1981) (Figs. 31–35)

Material examined

Iran: **Mazandaran**: 1 ♀, Elburz mts., Nur County, 3 km E Baladeh, 36°14'N, 51°51'E, 2030 m, litter near stream, sifted, 1.VI.2008, leg. PÜTZ (cAss).

Georgia: 1 ♂, Tbilisi env., Zchneti, 800 m, 22.VI.1986, leg. SCHÜLKE & WRASE (cSch).

Comment

The original description is based on a single female from "Now Schahr sur la mer Caspienne" (COIFFAIT 1981). The male from Georgia, which is identical in external characters to the female from Iran (Fig. 31), represents the first record since the original description and a new record from Georgia. The previously unknown male sexual characters are as follows: sternite VI at posterior margin with smooth median elevation, this elevation enclosed by dense, long, black setae; sternite VII with very deep and extensive impression, on either side of this impression posteriorly with pronounced carinae, each furnished with fringe of stout black setae (Fig. 32); sternite VIII with small V-shaped excision posteriorly; aedeagus shaped as in Figs. 33–35.

Rugilus armeniacus (Coiffait, 1970) (Figs. 37–39)

Stilicus armeniacus COIFFAIT, 1970: 154 f.

Type material examined

Holotype ♂: "[locality in Cyrillic] 9-VI-50 / Holotype / *Stilicus armeniacus* Coiff., H. COIFFAIT det. 1970 / Muséum Paris / *Rugilus armeniacus* (Coiffait), det. V. ASSING 2009" (MNHNP).

Comment

The original description is based on a male holotype and a female paratype from "Gorus, R. S. S. d'Arménie" (COIFFAIT 1970). The holotype was examined to ensure that none of the species described above is conspecific with *R. armeniacus*. The species is highly distinctive and separated from its congeners particularly by the coloration, as well as the male primary and secondary sexual characters. It is currently known from Armenia and Azerbaijan (SMETANA 2004). The similarities in external characters (coloration, head shape, slender pronotum, long appendages) and especially the similar male primary and secondary sexual characters suggest that the species is closely related to *R. iranicus*.

Redescription

Body length approximately 6.5 mm.

Coloration: forebody and appendages reddish, head between eyes transversely and weakly infuscate, elytra in posterior half with transversely and weakly infuscate area; abdomen dark-reddish, with segments VI–VII and anterior portion of segment VIII infuscate.

Head approximately 1.1 times as long as wide and of ovoid shape, behind eyes tapering towards posterior constriction in smooth curve (dorsal view), posterior angles obsolete; postocular region (between posterior margin of eye to posterior constriction) approximately 3 times as long as eyes in dorsal view; punctation dense and areolate. Antenna slender; antennomere III approximately 3 times as long as wide, IV twice as long as wide, V–IX of gradually decreasing length and decreasingly oblong, and X approximately as long as wide.

Pronotum 1.3 times as long as wide and 0.75 times as wide as head; impunctate mid-line narrow, obsolete near anterior and posterior margins.

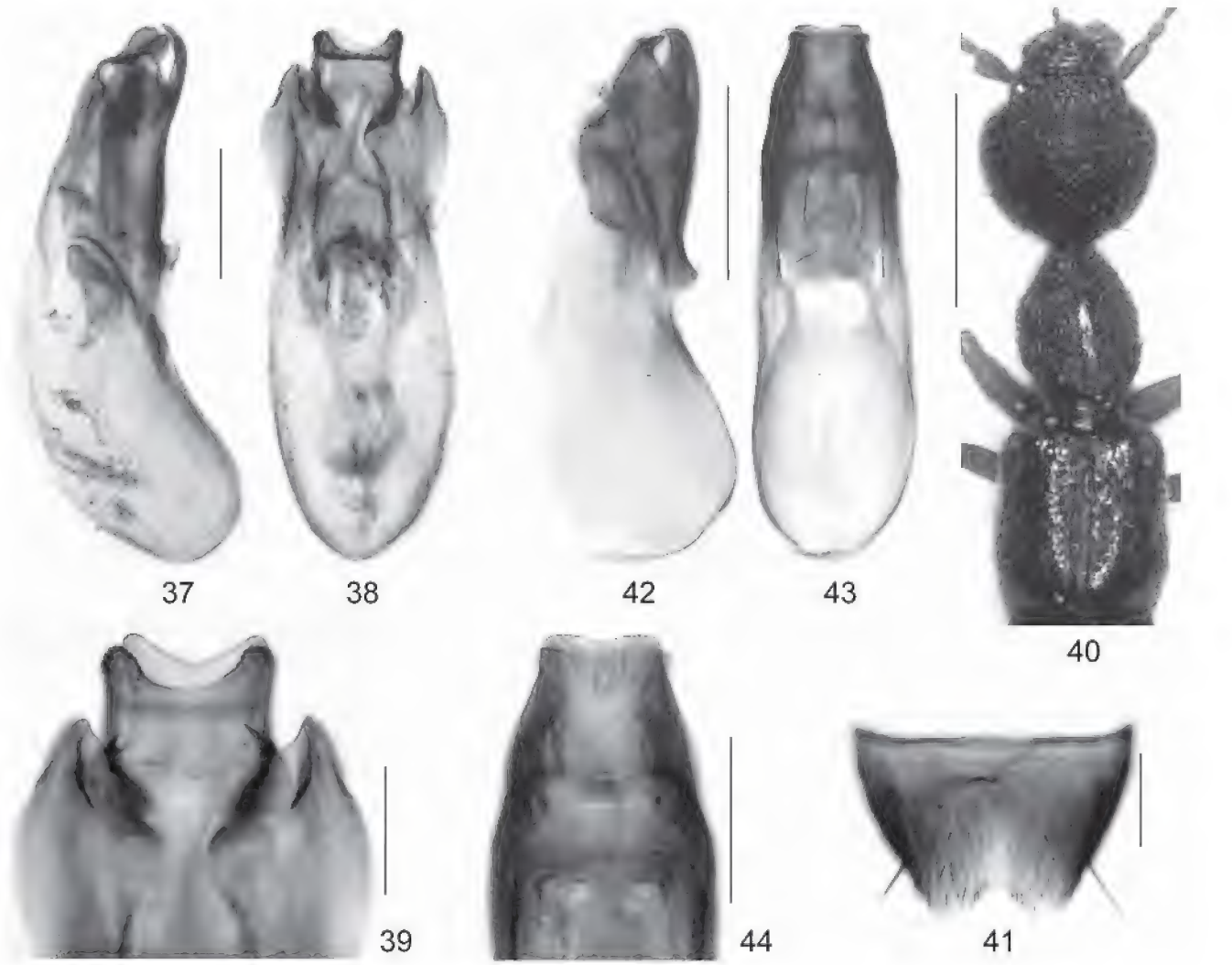
Elytra with pronounced humeral angles, 1.4 times as wide, and at suture approximately 0.9 times as long as pronotum; suture impressed in anterior third. Legs long and slender; metatibia almost 1.5 mm long; metatarsomere I approximately as long as the combined length of II–IV; metatarsomere IV distinctly oblong.

♂: sternite VI posteriorly with rather extensive semicircular area with conspicuously long, dense, and blackish setae; sternite VII with pronounced smooth median impression, posterior lateral margins of this impression furnished with long dark setae; posterior excision of sternite VIII small and V-shaped; aedeagus 0.83 mm long, of distinctive morphology (Figs. 37–39).

Rugilus orbiculatus (Paykull, 1789)

Material examined

Iran: **Azarbayjan-e Sharqi**: 1 ex., Komar Oliah, Kiyamaki Dagh, 38°44'N, 46°00'E, 1230 m, 11.VIII.2005, leg. FRISCH



Figs. 37–44. *Rugilus armeniacus* (Coiffait), holotype (37–39), and *R. longicollis* (Fauvel), lectotype (40–44). – **37**, **38**, **42**, **43**. Aedeagus in lateral and ventral view. **39**, **44**. Apical portion of aedeagus in ventral view. **40**. Forebody. **41**. Male sternite VIII. – Scale bars: 1.0 mm (40), 0.2 mm (37, 38, 41–43), 0.1 mm (39, 44).

& Serri (MNHUB). – **Razavi Khorasan**: 3 exs., 27 km SW Chanaran, SW Frizi, 36°28'N, 58°57'E, 1690 m, 29.V.2006, leg. Frisch & Serri (MNHUB, cAss).

Uzbekistan: 6 exs., E Tashkent, Chatkalskiy range, Shikaftar, 26.VII.2001 (cSch, cAss).

Comment

The above records from Uzbekistan represent a new country record of this widespread species.

Rugilus korbi (Fauvel, 1900)
(Fig. 45)

Stilicus korbi Fauvel, 1900: 226.

Type material examined

Syntypes: 5 ♀♀: "Kasp. Meer Geb, Lenkoran, 1897, Korb / Korbi Fvl. / Ex-Typis / Coll. et det. A. Fauvel, *Stilicus korbi* Fauv., R. I. Sc. N. B. 17.479 / *Rugilus korbi* (Fauvel), det. V. Assing 2009" (IRSNB).

Additional material examined

Iran: **Gilan**: 7 exs., Rudbar county, 7 km NW Bararu, 36°49'N, 49°38'E, 850 m, 7.VI.2008, leg. A. Pütz (cPüt, cAss); 5 exs. [partly teneral], Rudbar, Barrehsar, 36°47'N, 49°45'E, 1080 m, 30.VII.2005, leg. Frisch & Serri (MNHUB, cAss); 1 ex., Rudbar, Barrehsar, Damash road, Sebostaneh, 36°47'N, 49°48'E, 1400 m, 31.VII.2005, leg. Serri & Frisch (MNHUB); 3 exs., Fuman county, Masuleh–Khalkhal road, 4 km NW Masuleh, 37°10'N, 48°59'E, 1400 m, leaf litter sifted, 8.VI.2008, leg. Pütz (cPüt, cAss). – **Mazandaran**: 2 exs., Tonekabon county,

4.5 km SW Khanian, Sehezar forest, 36°33'N, 50°50'E, 940 m, leaf litter sifted, 5.VI.2008, leg. Pütz (cPüt, cAss); 2 exs., Chalus county, 10 km SE Abbasabad, 36°39'N, 51°12'E, 150 m, small stream, 4.VI.2008, leg. Pütz (cPüt, cAss); 3 exs., Babol county, 2 km SW Firuz Jah, 36°11'N, 52°39'E, 840 m, small stream, 31.V.2008, leg. Pütz (cPüt, cAss); 1 ex., Chalus County, 7 km N Makarud, 36°36'N, 51°10'E, beech forest, 1250 m, 3.VI.2008, leg. Pütz (cPüt); 1 ex., Sari county, Mohammadabad, 1 km W Afra Chal, 36°14'N, 53°14'E, 520 m, leaf litter sifted, 30.V.2008, leg. Pütz (cPüt); 1 ex., Sari county, Mohammadabad, NE Sangdeh, 36°04'N, 53°10'E, 1530 m, beech forest, 29.V.2008, leg. Pütz (cPüt); 1 ex., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°35'E, 1460 m, small stream, 6.VI.2008, leg. Pütz (cPüt); 1 ex., 12 km E Kiyasar, Alikolar, 36°13'N, 53°39'E, 1590 m, 9.VI.2006, leg. Frisch & Serri (MNHUB); 1 ex., Ramsar, Eshkatechal, 36°54'N, 50°35'E, 300 m, 28.VII.2005, leg. Frisch & Serri (MNHUB).

Comment

The original description is based on several syntypes ("Une série d'exemplaires") from "Lenkoran (Korb)" (Fauvel 1900). Unfortunately, all five syntypes in the Fauvel collection are females. A comparison of the above material from Iran with the type specimens revealed no significant differences. The elytra are on average somewhat longer and broader in the material from Iran, but elytral length appears to be subject to considerable intraspecific variation in this species. The known distribution of *R. korbi* is confined to Azerbaijan and Iran, where it has been recorded only from the north (Fig. 45).

Rugilus longicollis (Fauvel, 1900)
(Figs. 40–45)

Stilicus longicollis Fauvel, 1900: 226.

Type material examined

Lectotype ♂: "Persia settent.e, 1862–63, Coll. G Doria / Ex-Typis / Lectotypus / Coll. et det. A. Fauvel, *Stilicus longicollis* Fauv., R. I. Sc. N. B. 17.479 / *Rugilus longicollis* (Fauvel) ♂, V. Gusarov det. 1989" (IRSNB). – Paralectotypes: 4 ♀♀: same data as lectotype (IRSNB); 2 ♀♀: "Kaukas Leder / Ex-Typis / Coll. et det. A. Fauvel, *Stilicus longicollis* Fauv., R. I. Sc. N. B. 17.479 / *Rugilus longicollis* (Fauvel) ♀, V. Gusarov det. 1989" (IRSNB).

Additional material examined

Iran: **Azarbayjan-e Sharqi**: 25 exs. [partly teneral], Kalaybar, 38°51'N, 47°01'E, 1420 m, 9.VIII.2005, leg. Frisch & Serri (HMIM, MNHUB, cAss); 1 ex., S Tabriz, Kandovan, 37°47'N, 46°15'E, 2250 m, 8.VIII.2005, leg. Frisch & Serri (MNHUB); 1 ex., Kuh-e Narmigh, Someezarrin, 38°06'N, 47°18'E, 1800 m, 7.VIII.2005, leg. Frisch & Serri (MNHUB); 1 ex., Osku, Amghan (Kuh-e Sahand), 37°50'N, 46°16'E, 2100 m, 8.VIII.2005, leg. Frisch & Serri (MNHUB); 1 ex., Zijenab (Kuh-e Sahand), 37°52'N, 46°18'E, 2100 m, 8.VIII.2005, leg. Frisch & Serri (cAss). – **Azarbayjan-e Gharbi**: 1 ex., pass 25 km W Mahabad, 36°45'N, 45°32'E, 2080 m, 2.IX.2008, leg. Frisch & Serri (MNHUB); 2 exs., road Tabriz-Marand, 3 km N Ivand, 38°22'N, 46°06'E, 1700 m, 26.VIII.2008, leg. Frisch & Serri (MNHUB, cAss); 1 ex., road Khoy–Qotur, 2 km W Qotur, 38°29'N, 44°29'E, 1950 m, 29.VIII.2008, leg. Frisch & Serri (MNHUB); 1 ex., 10 km S Ziveh, 37°11'N, 44°53'E, 1810 m, 1.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex., Takab, 13 km E Takht-e-Soleyman, 36°36'N, 47°20'E, 2450 m, 8.IX.2008, leg. Frisch & Serri (MNHUB). – **Ardabil**: 4 exs., Khalkhal, Aznav spring, 37°35'N, 48°34'E, 1870 m, 3.VIII.2005, leg. Frisch & Serri (MNHUB, cAss); 6 exs., S Khalkhal, Asbu, 37°27'N, 48°40'E, 1700 m, 3.VIII.2005, leg. Frisch & Serri (MNHUB). – **Kordestan**: 7 exs., 15 km NW Divandarreh, 5 km NE Ebrahim Abad, 35°59'N, 46°52'E, 1980 m, 4.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 4 exs., 27 km SW Saqqez, 2 km SW Mir Deh, 36°08'N, 46°02'E, 1600 m, 3.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 1 ex., road Sanandaj–Divandarreh, 21 km S Divandarreh, 35°46'N, 47°05'E, 1890 m, 6.IX.2008, leg. Frisch & Serri (MNHUB); 5 exs., 5 km S Qorveh, Veihaj, 35°07'N, 47°46'E, 2060 m, 5.IX.2008, leg. Frisch & Serri (MNHUB, cAss). – **Zanjan**: 3 exs., Gilvan road, Khanchal, 36°42'N, 48°44'E, 2335 m, 11.VII.2006, leg. Serri (HMIM, cAss); 2 exs., 15 km SE Zanjan, 18 km NE Bonab, 36°42'N, 48°45'E, 2050 m, 25.VIII.2008, leg. Frisch & Serri (MNHUB, cAss). – **Mazandaran**: 10 exs., Elburz mts., Nur County, 3 km E Baladeh, 36°14'N, 51°51'E, 2030 m, litter near stream, sifted, 1.VI.2008, leg. Pütz (cPüt, cAss).; 1 ex., Nur county, W Baladeh, 36°14'N, 51°27'E, 3160 m, sifted, 1.VI.2008, leg. Pütz (cPüt); 1 ex., 35 km SW Pol-e Sefid, Sheshrudbar, 36°00'N, 52°52'E, 1540 m, 8.VI.2006, leg. Frisch & Serri (MNHUB); 5 exs., Kuh-e Damavand, Nandel, 36°01'N, 52°13'E, 1660 m, 16.VIII.2005, leg. Frisch & Serri (MNHUB); 2 exs., Kalardasht, Rudbarak, 36°27'N, 51°04'E, 1790–1950 m, 26.VII.2005, leg. Frisch & Serri (MNHUB, cAss); 2 exs., Kalardasht, Rudbarak, 36°28'N, 51°06'E, 1540–1640 m, 26.VII.2005, leg. Frisch & Serri (MNHUB). – **Tehran**: 5 exs., Damavand–Firuzkuh road, 30 km SW Firuzkuh, 35°41'N, 52°28'E, 2010 m, 21.V.2006, leg. Frisch & Serri (HMIM, MNHUB). – **Lorestan**: 1 ex., SE Dorud, Saravand, 33°23'N, 49°10'E, 2000 m, 26.VI.2004, leg. Frisch (cAss). – **Semnan**: 6 exs., Shahrud–Mojen road, 2 km SE Tash, 36°33'N, 54°40'E, 2190 m, 24.V.2006, leg. Frisch & Serri (MNHUB, cAss). – **Kerman**: 15 exs., road Bardsir–Baft, 10 km SE Qal'eh Askar, 29°28'N, 56°43'E, 2750 m, 6.V.2007, leg. Frisch & Serri (MNHUB, cAss); 3 exs., road Bardsir–Baft, 10 km SE Qal'eh Askar, 29°30'N, 56°38'E, 2750 m, 3.V.2007, leg. Frisch & Serri (MNHUB); 3 exs., pass Mahan-Sirch, east side, 30°12'N, 57°24'E, 2870 m, 30.IV.2007, leg. Frisch & Serri (MNHUB); 1 ex., 6 km N Rabor, 29°20'N, 56°52'E, 2590 m, 4.V.2007, leg. Frisch & Serri (MNHUB).

Georgia: 1 ex., Trialetskiy Khrebet, Bakuriani, 1500–1600 m, 8.VII.1986, leg. Schülke & Wrase (cSch); 6 exs., Tbilisi env., Manglisi, 1350 m, 23.VII.1985, leg. Wrase (cSch, cAss); 4 exs., Tbilisi, Lisi ozero, VI.–VII.1988, leg. Wrase (cSch); 2 exs., Tbilisi env., Kumisi, VI.1987, leg. Schülke & Wrase (cSch); 2 exs., Kumisi, 29.VI. and 1.VII.1986, leg. Schülke & Wrase (cSch); 1 ex., Tbilisi env., Mzcheta, VI.1986, leg. Schülke & Wrase (cSch); 1 ex., Mzcheta, 16.VII.1985, leg. Wrase (cAss); 1 ex., Tbilisi env., Tbiliskoye ozero, 19.VII.1985, leg. Wrase (cAss).

Comment

The original description is based on several syntypes ("Une série d'exemplaires") from "Perse septentrionale (G. Doria); Caucase (Leder)" (Fauvel 1900). The lectotype was designated by Gusarov (1991). The additional material listed above is distinguished from the lectotype by the

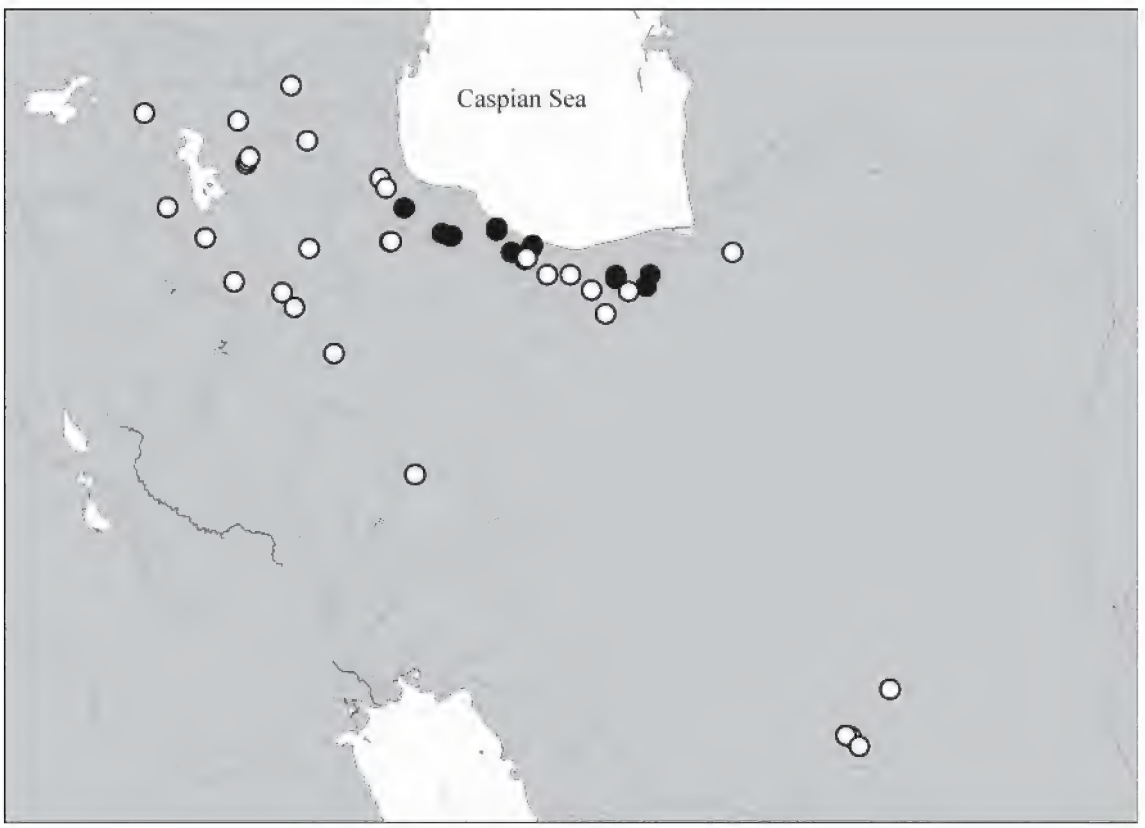


Fig. 45. Distribution of *Rugilus korbi* (Fauvel) (●) and *R. longicollis* (Fauvel) (○) in Iran.

somewhat shallower posterior excision of the male sternite VIII, but no significant differences in the morphology of the aedeagus were observed.

The species is apparently subject to considerable intraspecific variation of head shape, as well as the length and width of the elytra. Also, the apex of the ventral process of the aedeagus (ventral view) and the apical margin of the dorsal plate of the aedeagus may be more or less distinctly concave (dorsal view). For illustrations of the forebody and the male sexual characters of the lectotype see Figs. 40–44.

The known distribution includes Georgia, Azerbaijan, and Iran, where *R. longicollis* is apparently widespread and present also in the south (Fig. 45).

Ochthephilum turkestanicum (Korge 1968)

Material examined

Iran: **Kordestan**: 6 exs., Sanandaj–Divandarreh road, 33 km S Divandarreh, 35°40'N, 47°07'E, 2090 m, 6.IX.2008, leg. Frisch & Serri (MNHUB, cAss).

Comment

According to a recent revision, the distribution of this widespread species ranges from southern Italy in the west to Middle Asia (Assing 2009i). For additional records from Iran see Assing (2007a, 2009i).

Ochthephilum besucheti (Bordoni, 1980)

Material examined

Iran: **Azarbayjan-e Gharbi**: 3 exs., N Takab, 8 km E Takht-e-Soleyman, 36°36'N, 47°18'E, 2210 m, 7.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex., N Takab, 3 km NE Takht-e-Soleyman, 36°38'N, 47°14'E, 2270 m, 8.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex., N Takab, 16 km E Takht-e-Soleyman, 36°36'N, 47°21'E, 2270 m, 7.IX.2008, leg. Frisch & Serri (cAss); 3 exs. [1 teneral], pass 25 km W Mahabad, 36°45'N, 45°32'E, 2080 m, 2.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 2 exs., 20 km W Salmas, 10 km W Kuzeh Rash, 38°11'N, 44°31'E, 2100 m, 31.VIII.2008, leg. Frisch & Serri (MNHUB, cAss). – **Kordestan**: 1 ♀, pass 10 km NE Baneh, 36°04'N, 45°59'E, 1920 m, 3.IX.2008, leg. Frisch & Serri (MNHUB); 1 ♀, pass 21 km E Sanandaj, 35°20'N, 47°09'E, 2100 m, 5.IX.2008, leg. Frisch & Serri (MNHUB). – **Zanjan**: 1 ♀ [teneral], 15 km SE Zanjan,

18 km NE Bonab, 36°42'N, 48°45'E, 2050 m, 25.VIII.2008, leg. FRISCH & SERRI (MNHUB).

Comment

The distribution of *O. besucheti* ranges from northern Anatolia to northern Iran, from where is was previously recorded only once. For a map and additional records see ASSING (2009i).

Homaeotarsus iranoturcestanicus (Scheerpeltz, 1956)

Material examined

Iran: **Golestan**: 1 ex., 5 km W Sari Qamish, 37°52'N, 55°45'E, 155 m, river valley, at light, 27.V.2006, leg. HÁJEK & CHVOJKA (NMP).

Comment

The distribution of this species is confined to Middle Asia, including northern Iran and Afghanistan (COIFFAIT 1984, JARRIGE 1971, SMETANA 2004).

3.6 Staphylininae: Xantholinini

Leptacinus batychrus (Gyllenhal, 1827)

Material examined

Iran: **Azarbayjan-e Gharbi**: 2 exs., NW Piranshahr, 7 km road to Hashkan, 36°48'N, 45°05'E, 1600 m, 2.IX.2008, leg. FRISCH & SERRI (MNHUB); 1 ex., road Khoy–Qotur, 2 km W Qotur, 38°29'N, 44°29'E, 1950 m, 29.VIII.2008, leg. FRISCH & SERRI (MNHUB); 2 exs., Khoy–Siyah Chesmeh road, 9 km W Zar Abad, 38°47'N, 44°32'E, 1970 m, 30.VIII.2008, leg. FRISCH & SERRI (MNHUB); 1 ex., Takab, 13 km E Takht-e-Soleyman, 36°36'N, 47°20'E, 2450 m, 8.IX.2008, leg. FRISCH & SERRI (MNHUB); 1 ex., pass 25 km W Mahabad, 36°45'N, 45°32'E, 2080 m, 2.IX.2008, leg. FRISCH & SERRI (cAss). – **Kordestan**: 1 ex., 27 km SW Saqqez, 2 km SW Mir Deh, 36°08'N, 46°02'E, 1600 m, 3.IX.2008, leg. FRISCH & SERRI (MNHUB); 1 ex., 15 km NW Divandarreh, 5 km NE Ebrahim Abad, 35°59'N, 46°52'E, 1980 m, 4.IX.2008, leg. FRISCH & SERRI (cAss). – **Razavi Khorasan**: 1 ex., road Quchan–Bajgiran, 14 km NW Emam Qoli, 37°26'N, 58°30'E, 1640 m, 31.V.2006, leg. FRISCH & SERRI (MNHUB). – **Fars**: 1 ex., road Semirom–Abadeh, 22 km NE Khosrow-Shirin, 30°59'N, 52°07'E, 2480 m, 13.V.2007, leg. FRISCH & SERRI (cAss). – **Kerman**: 2 exs., 3 km E pass Mahan-Sirch, 30°12'N, 57°26'E, 2430 m, 26.IV.2007, leg. FRISCH & SERRI (MNHUB); 1 ex., road Bardsir–Baft, 10 km SE Qal'eh Askar, 29°28'N, 56°43'E, 2750 m, 6.V.2007, leg. FRISCH & SERRI (MNHUB); 1 ex., 30 km E Rabor, 2 km to Bagkoyeh, 29°19'N, 57°10'E, 2660 m, 5.V.2007, leg. FRISCH & SERRI (MNHUB).

Comment

According to HERMAN (2001) and SMETANA (2004), *L. batychrus* has a cosmopolitan distribution and was previously known also from Iran.

Leptacinus othioides Baudi di Selve, 1870

Material examined

Iran: **Azarbayjan-e Gharbi**: 2 exs., road Tabriz–Marand, 3 km N Ivand, 38°22'N, 46°06'E, 1700 m, 26.VIII.2008, leg. FRISCH & SERRI (MNHUB, cAss); 2 exs., N Takab, 3 km NE Takht-e-Soleyman, 36°38'N, 47°14'E, 2270 m, 8.IX.2008, leg. FRISCH & SERRI (MNHUB). – **Kordestan**: 1 ex., pass 21 km E Sanandaj, 35°20'N, 47°09'E, 2100 m, 5.IX.2008, leg. FRISCH & SERRI (cAss); 7 exs., 27 km SW Saqqez, 2 km SW Mir Deh, 36°08'N, 46°02'E, 1600 m, 3.IX.2008, leg. FRISCH & SERRI (MNHUB, cAss).

Comment

This species is widespread in the Western Palaeartic region, its previously known distribution extending eastwards to the Middle East (HERMAN 2001, SMETANA 2004). The above specimens represent the first records from Iran.

Leptacinus mirus **n. sp.**
(Figs. 46–57)

Type material

Holotype ♂: "Iran, Prov. Mazandaran [IR08-18], Chalus County, Elburz Mts., N-Slope, N Keldardasht, small stream, *Fagus* forest, 1245 m, 36°35'64.9"N, 51°09'55.4"E [recte: 36°35.649'N, 51°09.554'E], 03.VI.2008, leg. A. PÜTZ / Holotypus ♂ *Leptacinus mirus* sp. n. det. V. ASSING 2009" (cPüt).

Paratypes: 1 ex.: same data as holotype (cAss); 1 ex.: "Iran, Prov. Mazandaran [IR08-12], Nur County, Elburz Mts., S-Slope, 3 km E Baladeh, 36°14'24.9"N, 51°50'58.0"E [recte: 36°14.249'N, 51°50.580'E], 2034 m, stream, sifted, 01.VI.2008, leg. A. PÜTZ" (cPüt); 3 exs.: "Iran, Prov. Mazandaran [IR08-22], Tonekabon County, Elburz Mts., N-Slope, 4.5 km SW Khanian, Sehezar forest, leaves debris, sifted, small stream, 942 m, 05.VI.2008, 36°32'61.7"N, 50°49'89.2"E [recte: 36°32.617'N, 50°49.892'E], leg. A. PÜTZ" (cPüt, cAss); 2 exs.: "Iran, Prov. Gilan [IR08-27], Rasht County, Elburz Mts., N-Slope, 29 km S Rasht, sifted, 37°00'49.4"N, 49°36'30.9"E [recte: 37°00.494'N, 49°36.309'E], 140 m, 07.VI.2008, leg. A. PÜTZ" (cPüt); 1 ex.: "Iran, Prov. Gilan [IR08-28], Fuman County, Tales Mts., N-Slope, below Masuleh, sifted, small stream, pools, 688 m, 37°09'69.0"N, 49°01'60.8"E [recte: 37°09.69'N, 49°01.608'E], 8.VI.2008, leg. A. PÜTZ" (cAss).

Etymology

The specific epithet (Latin, adjective: extraordinary) refers to the remarkably distinctive morphology of the aedeagus.

Description

Habitus as in Fig. 46. Body length 4.5–6.5 mm.

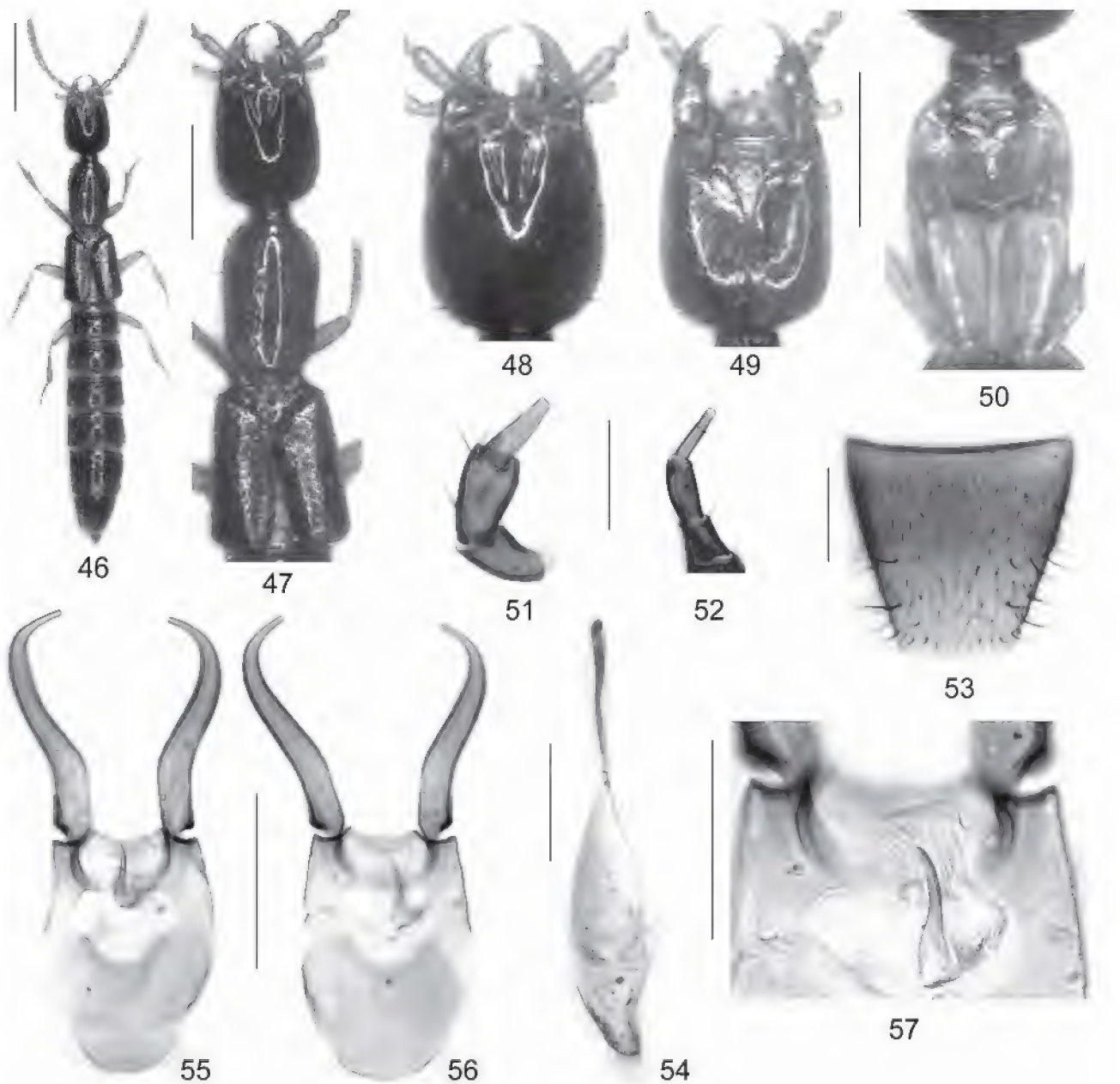
Coloration: body reddish-brown with black head, occasionally pronotum bright reddish and elytra yellowish; legs yellowish-red; antennae reddish.

Head (Fig. 48) of somewhat variable shape, distinctly oblong, 1.2–1.3 times as long as wide, dilated posteriad or with subparallel lateral margins; punctation distinct and

sparse, with interstices on average much wider than diameter of punctures, but density subject to considerable variation; interstices without microsculpture and glossy; ventral aspect as in Fig. 49; eyes approximately ⅓ the length of postocular region in dorsal view. Antenna moderately incrassate apically; antennomere III approximately as long as wide; IV distinctly transverse; X approximately 1.5 times as wide as long. Maxillary and labial palpi as in Figs. 51–52.

Pronotum approximately 0.9 times as wide as head and 1.6–1.7 times as long as wide; dorsal series somewhat irregular, composed of numerous (15–20) densely set coarse punctures; surface without microsculpture (Fig. 47); ventral aspect as in Fig. 50.

Elytra at suture approximately 0.75 times as long as pronotum; punctation variable, usually rather sparse and shallow, much shallower than that of pronotum (Fig. 47). Hind wings present.



Figs. 46–57. *Leptacinus mirus* n. sp. – **46**. Habitus. **47**. Forebody. **48**. Head in dorsal view. **49**. Head in ventral view. **50**. Prosternum. **51**. Maxillary palpus. **52**. Labial palpus. **53**. Male sternite VIII. **54**. Male sternite IX. **55**, **56**. Aedeagus. **57**. Internal structure of aedeagus. – Scale bars: 1.0 mm (46), 0.5 mm (47–50), 0.2 mm (53, 55, 56), 0.1 mm (51, 52, 54, 57).

Abdomen with fine and sparse punctation and with distinct transverse microsculpture; posterior margin of tergite VIII with narrow (reduced?) palisade fringe.

♂: tergite VIII unmodified, with weakly convex posterior margin (Fig. 53); sternite IX as in Fig. 54; aedeagus highly distinctive and of conspicuous morphology: median lobe small, of suboval shape, and with weakly sclerotised internal spine; parameres remarkably long, stout, and apically strongly bent (Figs. 55–57).

Comparative notes

The genus *Leptacinus* Erichson, 1839 is represented in the Western Palaearctic region by 17 species, some of them of doubtful status. The new species is distinguished from all of them particularly by the conspicuous morphology of the aedeagus, above all by the much longer and stouter parameres; it is separated from most of them also by the more numerous and densely set dorsal punctures of the pronotum, as well as by the usually distinctly bicoloured body. The morphology of the aedeagus is, in fact, so different from that of other Palaearctic *Leptacinus* species, somewhat resembling that of the genus *Erymus* Bordoni, 2002, that *L. mirus* was first believed to represent a distinct genus. However, since no additional differences in the mouthparts (Figs. 51–52), the ventral aspect of the body (Figs. 49–50), etc. were found and, above all, since the occurrence of a distinct monotypical genus in northern Iran would seem somewhat unlikely, the new species is attributed to *Leptacinus*.

Distribution and bionomics

The species was discovered in several localities in the Elburz and southern Tales mountains. The type specimens were collected by sifting leaf litter, mostly near streams, at a wide range of altitudes (140–2030 m).

Gyrohypnus angustatus Stephens, 1833

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., 20 km W Salmas, 10 km W Kuzeh Rash, 38°11'N, 44°31'E, 2100 m, 31.VIII.2008, leg. Frisch & Serri (MNHUB). – **Kordestan**: 1 ex., 15 km NW Divandarreh, 5 km NE Ebrahim Abad, 35°59'N, 46°52'E, 1980 m, 4.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 6 exs., 27 km SW Saqqez, 2 km SW Mir Deh, 36°08'N, 46°02'E, 1600 m, 3.IX.2008, leg. Frisch & Serri (MNHUB). – **Mazandaran**: 1 ex., Amol county, 10 km S Amol, 36°23'N, 52°21'E, 2040 m, leaf litter, sifted, 2.VI.2008, leg. Pütz (cPüt); 1 ex., Nur county, W Baladeh, 36°15'N, 51°27'E, 2950 m, sifted, 1.VI.2008, leg. Pütz (cPüt); 1 ex., Tonekabon county, 4.5 km SW Khanian, Sehezar forest, 36°33'N, 50°50'E, 940 m, leaf litter sifted, 5.VI.2008, leg. Pütz (cPüt). – **Tehran**: 1 ex., Damavand–Firuzkuh road, 30 km SW Firuzkuh, 35°41'N, 52°28'E, 2010 m, 21.V.2006, leg. Frisch & Serri (cAss). – **Semnan**: 2 exs., Shahrud–Mojen road, 2 km SE Tash, 36°33'N, 54°40'E, 2190 m, 24.V.2006, leg. Frisch & Serri (MNHUB, cAss). – **Razavi Khorasan**: 5 exs., SW Shandiz, Zoshg, 36°17'N, 59°07'E, 2150 m, 27.V.2006, leg. Frisch & Serri (MNHUB, cAss).

Comment

This widespread Western Palaearctic species was only recently reported from Iran for the first time (Assing 2007b).

Gyrohypnus fracticornis (Müller, 1776)

Material examined

Iran: **Kohgiluyeh & Boyerahmad**: 1 ex., 15 km W Yasuj, 30°42'N, 51°41'E, 2450 m, 9.VII.2004, leg. Ziegler et al. (HMIM).

Comment

Gyrohypnus fracticornis is widespread in the Palaearctic region and adventive also in the Neotropical, Nearctic, and Australian regions (Assing 2003b, Herman 2001, Smetana 2004).

Gyrohypnus punctulatus (Paykull, 1789)

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., road Tabriz–Marand, 3 km N Ivand, 38°22'N, 46°06'E, 1700 m, 26.VIII.2008, leg. Frisch & Serri (MNHUB).

Comment

According to Herman (2001) and Smetana (2004), this widespread Western Palaearctic species was previously known also from Iran.

Gauropterus fulgidus (Fabricius, 1787)

Material examined

Iran: **Golestan**: 2 exs., Tang Rah, Golestan National Park, 37°24'N, 55°47'E, 490 m, 4.VI.2006, leg. Frisch & Serri (MNHUB, cAss). – **Razavi Khorasan**: 2 exs., 20 km NW Torbat-e Heydariyeh, Senobar, 35°26'N, 49°06'E, 1730 m, 28.V.2006, leg. Frisch & Serri (MNHUB); 1 ex., Quchan–Bajgiran road, 6 km E Emam Qoli, Inche, 37°22'N, 58°34'E, 1750 m, 30.V.2006, leg. Frisch & Serri (MNHUB); 1 ex., Emam Qoli–Kapkan road, 17 km E Emam Qoli, Aghmazar, 37°19'N, 58°41'E, 1850 m, 31.V.2006, leg. Frisch & Serri (MNHUB); 1 ex., 27 km SW Chanaran, Abghad, 36°31'N, 59°04'E, 1380 m, 29.V.2006, leg. Frisch & Serri (cAss); 1 ex., Sah Jahan mts., Mareshk, 36°48'N, 59°33'E, 1800 m, 26.V.2006, leg. Frisch & Serri (MNHUB); 1 ex., SW Shandiz, Zoshg, 36°20'N, 59°11'E, 1750 m, 27.V.2006, leg. Frisch & Serri (cAss). – **Esfahan**: 1 ex., 10 km E Zefreh, 32°56'N, 52°22'E, 2490 m, 16.V.2007, leg. Frisch & Serri (MNHUB). – **Yasd**: 1 ex., 10 km NW Nir, Sakhvid, 31°31'N, 54°03'E, 2550 m, 14.V.2007, leg. Frisch & Serri (cAss). – **Kerman**: 7 exs., 3 km E pass Mahan-Sirch, 30°12'N, 57°26'E, 2430 m, 26.IV.2007, leg. Frisch & Serri (MNHUB, cAss).

Comment

Gauropterus fulgidus is apparently rather common in Iran; for additional records see Assing (2007b).

Gauropterus sanguinipennis (Kolenati, 1846)

Material examined

Iran: **Azarbayjan-e Sharqi**: 1 ex., 10 km N Kaleybar, Shargi, 17.–18.V.2007, leg. Anistschenko (cSha). – **Azarbayjan-e Gharbi**: 5 exs., Khoy–Siyah Chesmeh road, 9 km W Zar Abad, 38°47'N, 44°32'E, 1970 m, 30.VIII.2008, leg. Frisch & Serri (MNHUB, cAss); 3 exs., N Takab, 3 km NE Takht-e-Soleyman, 36°38'N, 47°14'E, 2270 m, 8.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 1 ex., 25 km N Oshnaviyeh, Sangar, 37°13'N, 45°07'E, 1650 m, 2.IX.2008, leg. Frisch & Serri (MNHUB); 3 exs., NW Piranshahr, 7 km road to Hashkan, 36°48'N, 45°05'E, 1600 m, 2.IX.2008, leg. Frisch & Serri (MNHUB, cAss). – **Kordestan**: 3 exs., pass 21 km E Sanandaj, 35°20'N, 47°09'E, 2100 m, 5.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 5 exs., 15 km NW Divandarreh, 5 km NE Ebrahim Abad, 35°59'N, 46°52'E, 1980 m, 4.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 3 exs., 27 km SW Saqqez, 2 km SW Mir Deh, 36°08'N, 46°02'E, 1600 m, 3.IX.2008, leg. Frisch & Serri (MNHUB, cAss). – **Mazandaran**: 2 exs., Shahmirzad-Astaneh, 60 km NE Shahmirzad, Golim, 36°00'N, 53°29'E, 1880 m, 23.V.2006, leg. Frisch & Serri (MNHUB); 2 exs., Nur county, E Baladeh, 36°11'N, 52°04'E, 1580 m, 2.VI.2008, leg. Pütz (cPüt, cAss). – **Tehran**: 9 exs., Damavand–Firuzkuh road, 30 km SW Firuzkuh, 35°41'N, 52°28'E, 2010 m, 21.V.2006, leg. Frisch & Serri (MNHUB, cAss). – **North Khorasan**: 3 exs., Shirvan–Esfarayen road, Sarchesmeh, 37°08'N, 57°46'E, 1730 m, 2.VI.2006, leg. Frisch & Serri (MNHUB); 5 exs., Shirvan–Quchan road, 24 km SSW Faruj, Garmab, 37°03'N, 58°07'E, 1710 m, 1.VI.2006, leg. Frisch & Serri (MNHUB, cAss). – **Semnan**: 2 exs., Shahrud–Mojen road, 5 km SE Tash, 36°31'N, 54°42'E, 2040 m, 24.V.2006, leg. Frisch & Serri (MNHUB, cAss); 1 ex., E Formumand, Aliabad, 36°30'N, 56°54'E, 1650 m, 25.V.2006, leg. Frisch & Serri (MNHUB). – **Razavi Khorasan**: 6 exs., Quchan–Bajgiran road, 6 km E Emam Qoli, Inche, 37°22'N, 58°34'E, 1750 m, 30.V.2006, leg. Frisch & Serri (MNHUB, cAss); 14 exs., road Quchan–Bajgiran, 14 km NW Emam Qoli, 37°26'N, 58°30'E, 1640 m, 31.V.2006, leg. Frisch & Serri (MNHUB, cAss). – **Chaharmahal & Bakhtiari**: 8 exs., road Meymand–Semirom, NE Meymand, 31°14'N, 51°18'E, 1840 m, 10.V.2007, leg. Frisch & Serri (MNHUB, cAss). – **Esfahan**: 1 ex., 10 km E Zefreh, 32°56'N, 52°22'E, 2490 m, 16.V.2007, leg. Frisch & Serri (MNHUB); 2 exs., 15 km E Zefreh, 32°55'N, 52°23'E, 2660 m, 16.V.2007, leg. Frisch & Serri (MNHUB); 9 exs., road Meymeh–Qamsar, pass 3 km W Qohrud, 33°39'N, 51°24'E, 2480 m, 17.V.2007, leg. Frisch & Serri (HMIM, MNHUB, cAss); 1 ex., road Semirom–Shahreza, Koruyeh, 31°42'N, 51°46'E, 2350 m, 12.V.2007, leg. Frisch & Serri (MNHUB); 4 exs., 15 km NNE Semirom, 31°32'N, 51°37'E, 2650 m, 12.V.2007, leg. Frisch & Serri (HMIM, cAss). – **Yasd**: 5 exs., road Taft–Nir, SE Sanich, 31°36'N, 54°00'E, 2480 m, 14.V.2007, leg. Frisch & Serri (MNHUB). – **Fars**: 1 ex., SE Sepidan, pass Sarbast-Dalkhon, 30°16'N, 52°04'E, 2290 m, 9.V.2007, leg. Frisch & Serri (cAss).

Comment

Like *G. fulgidus*, this species is common in Iran. For additional records see Assing (2007b) and Jarrige (1971).

Gauropterus bucharicus Bernhauer, 1905

Material examined

Iran: **Azarbayjan-e Gharbi**: 4 exs., Khoy–Siyah Chesmeh road, 9 km W Zar Abad, 38°47'N, 44°32'E, 1970 m, 30.VIII.2008, leg. Frisch & Serri (MNHUB, cAss); 1 ex., N Takab, 16 km E Takht-e-Soleyman, 36°36'N, 47°21'E, 2270 m, 7.IX.2008, leg. Frisch & Serri (MNHUB). – **North Khorasan**: 1 ex., Shirvan–Quchan road, 24 km SSW Faruj, Garmab, 37°03'N, 58°07'E, 1710 m, 1.VI.2006, leg. Frisch & Serri (cAss). – **Lorestan**: 2 exs., 55 km N Andimeshk, Sar-Takht, 3.–4.V.2007, leg. Anistschenko (cAss, cSha). – **Razavi Khorasan**: 1 ex., Sah Jahan mts., Mareshk, 36°48'N, 59°33'E, 1800 m, 26.V.2006, leg. Frisch & Serri (MNHUB); 1 ex., SW Shandiz, Zoshg, 36°20'N, 59°11'E, 1750 m, 27.V.2006, leg. Frisch & Serri (MNHUB). – **Kerman**: 1 ex., Khabr, 28°49'N, 56°20'E, 2060 m, 21.IV.2006, leg. Frisch & Serri (MNHUB); 2 exs., 100 km E Hajiabad, 4 km W Sorkhan, 28°20'N, 56°51'E, 1430 m, 20.IV.2006, leg. Frisch & Serri (MNHUB); 1 ex., Orzu'ijeh–Baft road, 28°50'N, 56°39'E, 2150 m, 21.IV.2006, leg. Frisch & Serri (MNHUB); 1 ex., 3 km E pass Mahan-Sirch, 30°12'N, 57°26'E, 2430 m, 26.IV.2007, leg. Frisch & Serri (MNHUB). – **Hormozgan**: 2 exs., Tall-e Gerdu, Homag road, 27°51'N, 56°28'E, 1050 m, 19.IV.2006, leg. Frisch & Serri (MNHUB); 1 ex., Tall-e Gerdu, 27°49'N, 56°25'E, 820 m, 19.IV.2006, leg. Frisch & Serri (cAss); 2 exs., 9 km SW Hajiabad, 28°15'N, 55°51'E, 840 m, 22.IV.2006, leg. Frisch & Serri (MNHUB, cAss).

Comment

The known distribution of *G. bucharicus* is confined to Uzbekistan, Afghanistan, and Iran, from where it was only recently reported for the first time (Assing 2007b).

Stenistoderus versicolor (Solsky, 1871)

Material examined

Iran: **Yasd**: 1 ex., 10 km NW Nir, Sakhvid, 31°31'N, 54°03'E, 2550 m, 14.V.2007, leg. Frisch & Serri (MNHUB). – **Kerman**: 2 exs., road Bardsir–Baft, 10 km SE Qal'eh Askar, 29°30'N, 56°38'E, 2750 m, 3.V.2007, leg. Frisch & Serri (MNHUB, cAss).

Comment

This species was previously known from Ukraine, the Caucasus region (Georgia, Russia), and Tajikistan (Herman 2001, Smetana 2004). The above specimens represent the first records from Iran.

Xantholinus fortepunctatus Motschulsky, 1860

Material examined

Iran: **Semnan**: 6 exs., Shahrud–Mojen road, 2 km SE Tash, 36°33'N, 54°40'E, 2190 m, 24.V.2006, leg. Frisch & Serri (MNHUB, cAss). – **Razavi Khorasan**: 2 exs., Emam Qoli–Kapkan road, 17 km E Emam Qoli, Aghmazar, 37°19'N, 58°41'E, 1850 m, 31.V.2006, leg. Frisch & Serri (MNHUB, cAss); 8 exs., SW Shandiz, Zoshg, 36°20'N, 59°11'E, 1750 m, 27.V.2006, leg. Frisch & Serri (MNHUB, cAss).

Comment

There has been considerable confusion regarding the identity of this species; for a detailed discussion see ASSING (2007b). The above specimens confirm its presence in Iran.

Xantholinus reitteri Coiffait, 1966

Material examined

Iran: **Mazandaran**: 1 ex., Kalardasht, Rudbarak, 36°27'N, 51°04'E, 1790–1950 m, 26.VII.2005, leg. FRISCH & SERRI (MNHUB); 1 ex., 12 km E Kiyasar, Alikolar, 36°13'N, 53°39'E, 1590 m, 9.VI.2006, leg. FRISCH & SERRI (cAss); 2 exs., Chalus county, 10 km SE Abbasabad, 36°39'N, 51°12'E, 150 m, small stream, 4.VI.2008, leg. PÜTZ (cPüt); 1 ex., Tonekabon county, 4.5 km SW Khanian, Sehezar forest, 36°33'N, 50°50'E, 940 m, leaf litter sifted, 5.VI.2008, leg. PÜTZ (cPüt); 1 ex., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. PÜTZ (cPüt).

Comment

Xantholinus reitteri has had a history of confusion with *X. fortepunctatus*; its confirmed distribution includes Georgia, Turkey, and Iran, from where it was only recently reported for the first time (ASSING 2007b).

Xantholinus audrasi Coiffait, 1956

Material examined

Iran: **Azarbayjan-e Gharbi**: 2 exs., N Takab, 11 km E Takht-e-Soleyman, 36°37'N, 47°19'E, 2300 m, 7.IX.2008, leg. FRISCH & SERRI (MNHUB, cAss); 1 ex., N Takab, 3 km NE Takht-e-Soleyman, 36°38'N, 47°14'E, 2270 m, 8.IX.2008, leg. FRISCH & SERRI (MNHUB); 1 ex., road Maku–Bazargan, 3 km NW Avajiq, 39°21'N, 44°07'E, 2170 m, 27.VIII.2008, leg. FRISCH & SERRI (MNHUB).

Comment

Xantholinus audrasi has a distribution of the Ponto-Mediterranean type. For additional records from Iran see ASSING (2007b).

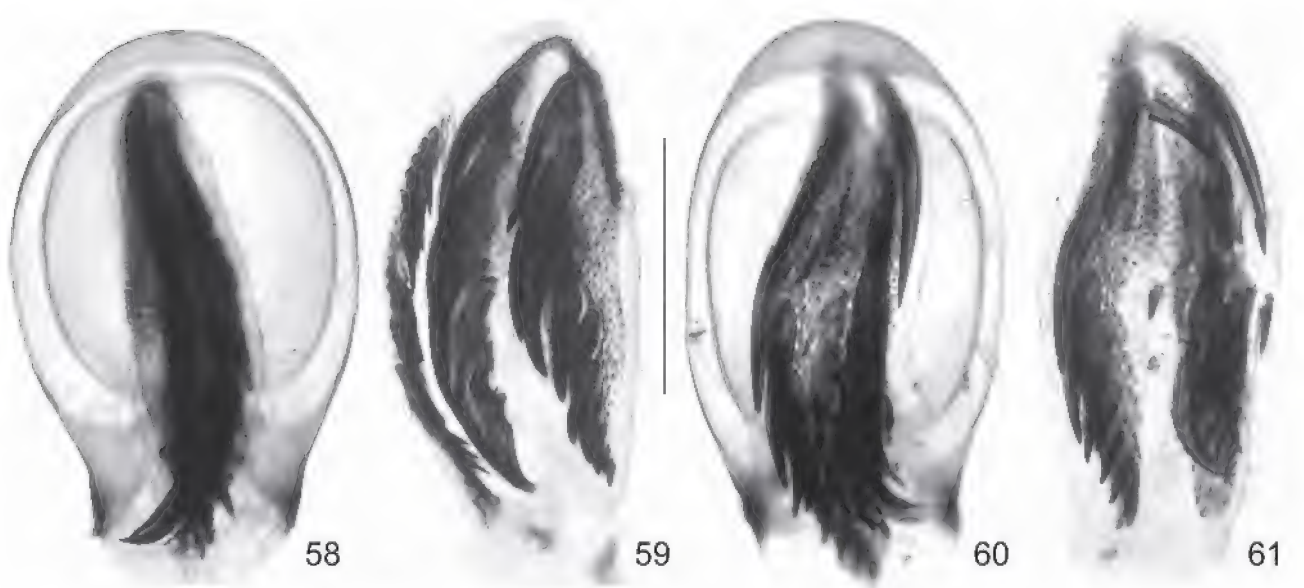
Xantholinus martensi Bordoni, 1983; **revalidated** (Figs. 58–61)

Material examined

Iran: **Mazandaran**: 6 exs., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. PÜTZ (cPüt, cAss); 3 exs., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°35'E, 1460 m, small stream, 6.VI.2008, leg. PÜTZ (cPüt, cAss); 1 ex., Tonekabon county, 4.5 km SW Khanian, Sehezar forest, 36°33'N, 50°50'E, 940 m, leaf litter sifted, 5.VI.2008, leg. PÜTZ (cAss); 2 exs., Chalus County, 7 km N Makarud, 36°36'N, 51°10'E, beech forest, 1250 m, 3.VI.2008, leg. PÜTZ (cPüt, cAss).

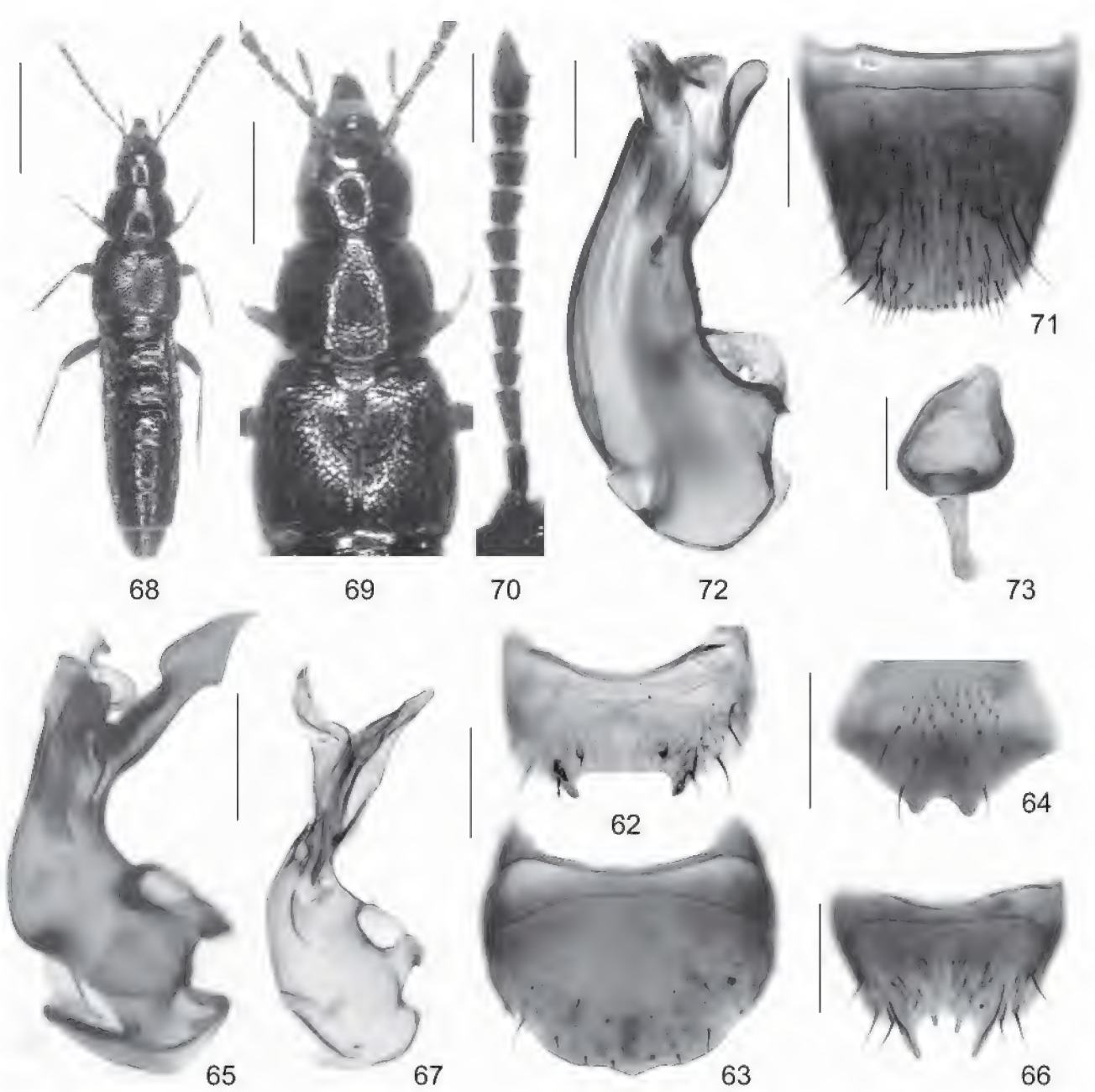
Comment

Based on an examination of the type material of *X. martensi* from Mazandaran, the name was placed in synonymy with *X. crassicornis* Hochhuth, 1851 by ASSING (2007b). A comparison of the above material with specimens of *X. crassicornis* from northeastern Anatolia and



Figs. 58–61. *Xantholinus martensi* Bordoni from Iran (58, 59) and Azerbaijan (60, 61). – **58**, **60**. Aedeagus in dorsal view. **59**. Aedeagus in lateral view. **61**. Internal structures of aedeagus in squeeze preparation. – Scale bar: 0.5 mm.

Georgia, however, revealed that *X. martensi* is in fact distinct from *X. crassicornis*. True, the aedeagus of both species is characterised by two series of long, massive, and strongly sclerotised spines, but the aedeagus of *X. martensi* is significantly larger and the aedeagal spines are much more massive. Moreover, a re-examination of a male previously recorded as *X. crassicornis* from Azerbaijan revealed that it, too, apparently refers to *X. martensi*, if it does not represent yet another species. The additional series of short spines, which is clearly visible in the material from Mazandaran, was not found in the aedeagus of the male from Azerbaijan, but in other respects the internal structures are similar. For illustrations of the aedeagi of males from Iran (Mazandaran) and Azerbaijan see Figs. 58–61.



Figs. 62-73. *Gyrophaena korbi* Strand (62–65), *G. strictula* Erichson from Iran (66, 67), and *Pronomaea denigrata* n. sp. (68–73). – **62**, **66**. Male tergite VIII. **63**, **71**. Male sternite VIII. **64**. Male tergite X. **65**, **67**, **72**. Median lobe of aedeagus in lateral view. **68**. Habitus. **69**. Forebody. **70**. Antenna. **73**. Spermatheca. – Scale bars: 1.0 mm (68), 0.2 mm (62, 63, 66, 69–71), 0.1 mm (64, 65, 67, 72), 0.05 mm (73).

3.7 Trichophyinae

Trichophya pilicornis (Gyllenhal, 1810)

Material examined

Iran: **Mazandaran**: 2 exs., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. Pütz (cPüt, cAss).

Comment

This species is widespread in the Palaearctic region, but was previously unknown from Iran.

3.8 Aleocharinae

Gyrophaena korbi Strand, 1939
(Figs. 62–65)

Material examined

Iran: **Gilan**: 29 exs., Rasht county, Elburz mts., 29 km S Rasht, 37°01'N, 49°36'E, 140 m, sifted, 7.VI.2008, leg. Pütz (cPüt, cAss). – **Mazandaran**: 6 exs., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. Pütz (cPüt); 1 ex., Tonekabon county, 4.5 km SW Khanian, Sehezar forest, 36°33'N, 50°50'E, 940 m, leaf litter sifted, 5.VI.2008, leg. Pütz (cPüt); 1 ex., Sari county, Mohammadabad, 1 km W Afra Chal, 36°14'N, 53°14'E, 520 m, leaf litter sifted, 30.V.2008, leg. Pütz (cPüt); 1 ex., Sari county, Mohammadabad, NE Sangdeh, 36°04'N, 53°10'E, 1530 m, beech forest, 30.V.2008, leg. Pütz (cPüt).

Comment

The original description of *G. korbi* is based on approximately 50 specimens from Lenkoran (Strand 1939). The similarly derived male secondary sexual characters (modifications of tergite VIII, apically bifid tergite X, shape of sternite VIII), as well as the similar morphology of the aedeagus suggest that this species is the adelphotaxon of *G. joyioides* Wüsthoff, 1937. Since the only illustration available in the literature is the rough sketch of the apical portion of the aedeagus in Strand (1939), the male primary and secondary sexual characters are illustrated in Figs. 62–65.

To my knowledge, *G. korbi* has not been reported again since the original description. The above specimens represent the first records from Iran.

Gyrophaena affinis Mannerheim, 1830

Material examined

Iran: **Gilan**: 1 ex., Rasht county, Elburz mts., 29 km S Rasht, 37°01'N, 49°36'E, 140 m, sifted, 7.VI.2008, leg. Pütz (cPüt). – **Mazandaran**: 1 ex., Sari county, Mohammadabad, NE Sangdeh, 36°04'N, 53°10'E, 1530 m, beech forest, 29.V.2008, leg. Pütz (cAss).

Comment

The above specimens represent the first records of this widespread Holarctic species from Iran.

Gyrophaena joyi Wendeler, 1924

Material examined

Iran: **Gilan**: 1 ex., Rasht county, Elburz mts., 29 km S Rasht, 37°01'N, 49°36'E, 140 m, sifted, 7.VI.2008, leg. Pütz (cPüt). – **Mazandaran**: 11 exs., Chalus county, 10 km SE Abbasabad, 36°39'N, 51°12'E, 150 m, small stream, 4.VI.2008, leg. Pütz (cPüt, cAss); 4 exs., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. Pütz (cPüt, cAss); 1 ex., Sari County, Mohammadabad, 2 km SW Majid, 36°09'N, 53°13'E, 870 m, small stream, 30.V.2008, leg. Pütz (cPüt).

Comment

This species is widespread in the Western Palaearctic region, but was previously unknown from Iran (Smetana 2004).

Gyrophaena strictula Erichson, 1839
(Figs. 66, 67)

Material examined

Iran: **Mazandaran**: 1 ex., Chalus county, 10 km SE Abbasabad, 36°39'N, 51°12'E, 150 m, small stream, 4.VI.2008, leg. Pütz (cPüt).

Comment

This species is widespread in the Western Palaearctic region and has been reported also from West Siberia, but was previously unknown from Iran. The aedeagus of the above male is somewhat smaller and of slightly different shape than that of material seen from Central Europe. Also, the pronotum is slightly smaller and less transverse. However, the specimen is slightly teneral, which would account for these differences. In any case, more material is required to assess if they are constant.

Pronomaea araxicola Reitter, 1898
(Fig. 74)

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., road Tabriz–Marand, 4 km S Ivand, 38°18'N, 46°08'E, 1560 m, 26.VIII.2008, leg. Frisch & Serri (MNHUB); 3 exs., 18 km SE Qaran Ziya'oddin, 38°51'N, 45°14'E, 960 m, 26.VIII.2008, leg. Frisch & Serri (MNHUB, cAss).

Comment

The distribution of *P. araxicola* ranges from Cyprus, Georgia, and the Middle East to northwestern Iran (Fig. 74), from where it was recently reported for the first time (Assing 2007c).

Pronomaea procerula Assing, 2007
(Fig. 74)

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., NW Piranshahr, 7 km road to Hashkan, 36°48'N, 45°05'E, 1600 m, 2.IX.2008, leg. Frisch & Serri (MNHUB); 2 exs., 10 km S Ziveh, 37°11'N, 44°53'E, 1810 m, 1.IX.2008, leg. Frisch & Serri (MNHUB); 2 exs., 14 km S Ziveh, 37°01'N, 44°53'E, 2320 m, 1.IX.2008, leg. Frisch & Serri (MNHUB, cAss). – **Chaharmahal & Bakhtiari**: 1 ex., Lordegan, Atashgah, 31.28°N, 50.97°E, 1500 m, 5.VII.2004, leg. Ziegler et al. (HMIM). – **Fars**: 1 ex., Margoon, 30°32'N, 51°55'E, 2040 m, 19.VII.2004, leg. Frisch & Serri (MNHUB).

Comment

This species is currently known only from Iran. The above specimens represent the first records since the original description, which is based on material from Fars and Kohgiluyeh & Boyerahmad provinces (Assing 2007a). The currently known distribution is illustrated in Fig. 74.

Pronomaea khnzoriani Semenov, 2003
(Fig. 74)

Material examined

Iran: **Azarbayjan-e Sharqi**: 1 ex., Kharvana, Komar, 38°43'N, 48°00'E, 1320 m, 7.VIII.2005, leg. Serri & Frisch (HMIM). – **Azarbayjan-e Gharbi**: 5 exs., road Maku–Bazargan, 7 km road to Avajiq, 39°21'N, 44°19'E, 1520 m, 27.VIII.2008, leg. Frisch & Serri (MNHUB); 11 exs., Takab, 13 km E Takht-e-Soleyman, 36°36'N, 47°20'E, 2450 m, 8.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 2 exs., 14 km S Ziveh, 37°01'N, 44°53'E, 2320 m, 1.IX.2008, leg. Frisch & Serri (MNHUB); 24 exs., road Tabriz–Marand, 3 km N Ivand, 38°22'N, 46°06'E, 1700 m, 26.VIII.2008, leg. Frisch & Serri (MNHUB, cAss); 2 exs., NW Piranshahr, 7 km road to Hashkan, 36°48'N, 45°05'E, 1600 m, 2.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 1 ex., Khoy–Siyah Chesmeh road, 9 km W Zar Abad, 38°47'N, 44°32'E, 1970 m, 30.VIII.2008, leg. Frisch & Serri (MNHUB); 9 exs., Khoy–Siyah Chesmeh road, 21 km W Zar Abad, 38°44'N, 44°28'E, 2350 m, 30.VIII.2008, leg. Frisch & Serri (MNHUB); 1 ex., Khoy–Siyah Chesmeh road, 17 km W Zar Abad, 38°46'N, 44°29'E, 2640 m, 30.VIII.2008, leg. Frisch & Serri (MNHUB); 2 exs., road Tabriz–Marand, 4 km S Ivand, 38°18'N, 46°08'E, 1560 m, 26.VIII.2008, leg. Frisch & Serri (MNHUB). – **Kordestan**: 1 ex., Sanandaj–Divandarreh road, 33 km S Divandarreh, 35°40'N, 47°07'E, 2090 m, 6.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex., 15 km NW Divandarreh, 5 km NE Ebrahim Abad, 35°59'N, 46°52'E, 1980 m, 4.IX.2008, leg. Frisch & Serri (MNHUB); 7 exs., 5 km S Qorveh, Veihaj, 35°07'N, 47°46'E, 2060 m, 5.IX.2008, leg. Frisch & Serri (MNHUB, cAss). – **Mazandaran**: 2 exs., Nur county, W Baladeh, 36°14'N, 51°27'E, 3160 m, sifted, 1.VI.2008, leg. Pütz (cPüt, cAss); 1 ex., Nur county, W Baladeh, 36°15'N, 51°27'E, 2950 m, stream, sifted, 1.VI.2008, leg. Pütz (cPüt); 1 ex., Sari county, Mohammadabad, 2.2 km NE Bendela, 36°04'N, 53°10'E, 1530 m, beech forest, 30.V.2008, leg. Pütz (cPüt). – **Golestan**: 22 exs., Golestan National Park, Tang Rah, 37°24'N, 55°47'E, 490 m, 4.VI.2006, leg.

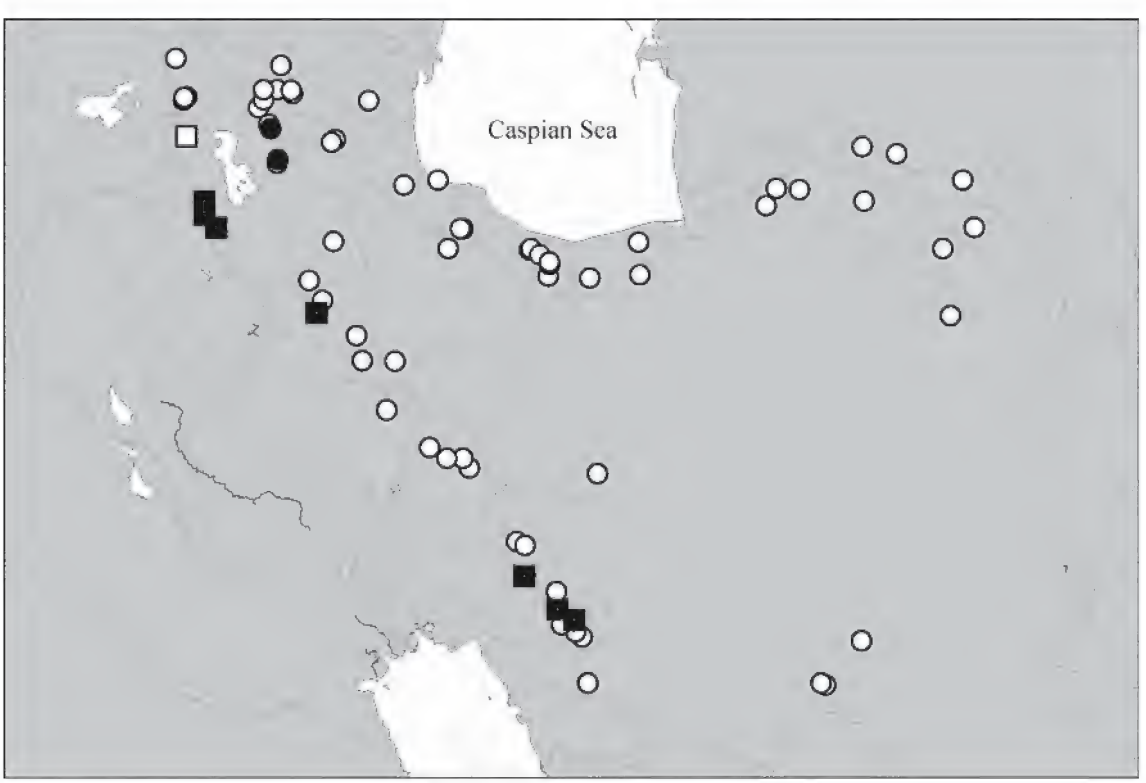


Fig. 74. Distribution of the genus *Pronomaea* in Iran: *P. khnzoriani* Semenov (○), *P. araxicola* Reitter (●), *P. procerula* Assing (■), and *P. denigrata* n. sp. (□).

FRISCH & SERRI (MNHUB, cAss); 1 ex., 28 km SE Minu Dasht, Dozeyn, 37°08'N, 55°35'E, 950 m, 4.VI.2006, leg. FRISCH & SERRI (MNHUB). – **Lorestan**: 1 ex., Aligudarz, Chaghagorg, 33.19°N, 49.50°E, 2400 m, 29.VI.2004, leg. ZIEGLER et al. (HMIM). – **Razavi Khorasan**: 4 exs., 27 km SW Chanaran, SW Frizi, 36°28'N, 58°57'E, 1690 m, 29.V.2006, leg. FRISCH & SERRI (MNHUB); 1 ex., Sah Jahan mts., Mareshk, 36°48'N, 59°33'E, 1800 m, 26.V.2006, leg. FRISCH & SERRI (MNHUB); 12 exs., 20 km NW Torbat-e Heydariyeh, Senobar, 35°26'N, 59°06'E, 1730 m, 28.V.2006, leg. FRISCH & SERRI (MNHUB, cAss). – **Chaharmahal & Bakhtiari**: 3 exs., Ardal, Chartagh, 31.84°N, 50.83°E, 2185 m, 5.VII.2004, leg. ZIEGLER et al. (HMIM); 1 ex., Ardal, Chartagh, Sabzkuh, 31.77°N, 50.98°E, 2250 m, 5.VII.2004, leg. ZIEGLER et al. (HMIM). – **Kohgiluyeh & Boyerahmad**: 10 exs., road Yasuj–Sepidan, 20 km S Yasuj, 30.47°N, 51.69°E, 2230 m, 10.VII.2004, leg. ZIEGLER et al. (HMIM). – **Esfahan**: 5 exs., S Semirom, Komeh, 31°01'N, 51°35'E, 2810 m, 11.V.2007, leg. FRISCH & SERRI (MNHUB, cAss); 2 exs., 10 km E Zefreh, 32°56'N, 52°22'E, 2490 m, 16.V.2007, leg. FRISCH & SERRI (MNHUB). – **Fars**: 1 ex., SE Sepidan, pass Sarbast-Dalkhon, 30°16'N, 52°04'E, 2290 m, 9.V.2007, leg. FRISCH & SERRI (MNHUB); 2 exs., road Sepidan–Komehr, 3 km NW Sepidan, 30°21'N, 51°57'E, 2850 m, 8.V.2007, leg. FRISCH & SERRI (MNHUB, cAss). – **Kerman**: 2 exs., road Bardsir–Baft, 10 km SE Qal'eh Askar, 29°28'N, 56°43'E, 2750 m, 6.V.2007, leg. FRISCH & SERRI (MNHUB, cAss); 4 exs., road Bardsir–Baft, Qal'eh Askar, 29°30'N, 56°38'E, 2750 m, 3.V.2007, leg. FRISCH & SERRI (MNHUB, cAss); 1 ex., pass Mahan-Sirch, east side, 30°12'N, 57°24'E, 2870 m, 30.IV.2007, leg. FRISCH & SERRI (MNHUB).

Comment

Pronomaea khnzoriani is apparently the most common species of the genus in Iran (Fig. 74). For additional records and distribution maps showing the total range of the species see ASSING (2007a, c).

Pronomaea denigrata **n. sp.**
(Figs. 68–74)

Type material

Holotype ♂: "Iran, Azarbayjan-e Gharbi, 20 km W Salmas, 10 km W Kuzeh Rash, 2100 m, N 38°11'17", E 44°31'24", 31.VIII.2008, lg. FRISCH & SERRI / Holotypus ♂ *Pronomaea denigrata* sp. n. det. V. ASSING 2010" (MNHUB).

Paratypes: 1 ♂, 2 ♀♀: same data as holotype (MNHUB, cAss).

Etymology

The specific epithet (Latin, adjective: blackened) refers to the almost uniformly blackish coloration of the species.

Description

Habitus as in Fig. 68. Body length 3.3–4.3 mm.

Coloration: body blackish; legs dark-brown to blackish-brown with reddish tarsi; antennae blackish-brown.

Head with moderately fine and moderately sparse punctation; interstices in lateral dorsal portion approximately as wide as, in median dorsal portion wider than diameter of punctures; microsculpture absent or indistinct; eyes large, longer than postocular region in dorsal view (Fig. 69). Antenna moderately slender, preapical antennomeres weakly transverse (Fig. 70).

Pronotum 1.20–1.25 times as wide as long and 1.3–1.4 times as wide as head, widest in or slightly before middle; posterior angles obtusely marked; lateral margins in posterior half not distinctly sinuate in dorsal view; punctation somewhat denser and coarser than that of head; microsculpture absent (Fig. 69).

Elytra approximately as long as pronotum; punctation slightly coarser than that of pronotum; interstices without microsculpture (Fig. 69). Hind wings present.

Abdomen slightly narrower than elytra; tergites III–V anteriorly with deep transverse impressions; punctation moderately fine and sparse, anterior half of tergite VI with denser punctation; tergites VI–VII with shallow traces of microsculpture; tergites III–V without, or with very indistinct traces of microsculpture; dorsal surface shiny; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII truncate to indistinctly pointed in the middle.

♂: posterior margin of sternite VIII very weakly convex (Fig. 71); median lobe of aedeagus of distinctive morphology, without projection at base of ventral process in lateral view (Fig. 72).

♀: posterior margin of sternite VIII produced in the middle; spermathecal capsule with very short and thin proximal portion (Fig. 73).

Comparative notes

In general appearance (size, shape, coloration), *P. denigrata* somewhat resembles *P. rostrata* Erichson, 1837. However, based on the morphology of the aedeagus and particularly that of the spermatheca, it is undoubtedly closely allied to *P. anatolica* Fagel, 1969, *P. khnzoriani*, and *P. flavirostris* Semenov, 2003, together with which it would key out at couplets 5–6 in the key in ASSING (2007c). It is distinguished from these species by the almost uniformly black coloration, the more glossy appearance, and above all by the shape of the aedeagus. It is additionally separated from *P. khnzoriani*, the only representative of this species group recorded from Iran, by larger average body size. For illustrations of the sexual characters of the Western Palaearctic *Pronomaea* species see ASSING (2007a, c).

Distribution and bionomics

The type locality is situated in northwestern Iran, very close to the border with Turkey (Fig. 74), at an altitude of 2100 m.

Silusa (Stenusa) brevipes **n. sp.**
(Figs. 75–80)

Type material

Holotype ♂: "Iran, North Teheran [IR08-32], Shemshak–Dizin road, 7 km E Dizin, small stream, 36°01'84.6"N, 51°28'90.3"E [recte: 36°01.846'N, 51°28.903'E], 2813 m, 10.VI.2008, leg. A. Pütz / Holotypus ♂ *Silusa brevipes* sp. n. det. V. Assing 2009" (cPüt).

Etymology

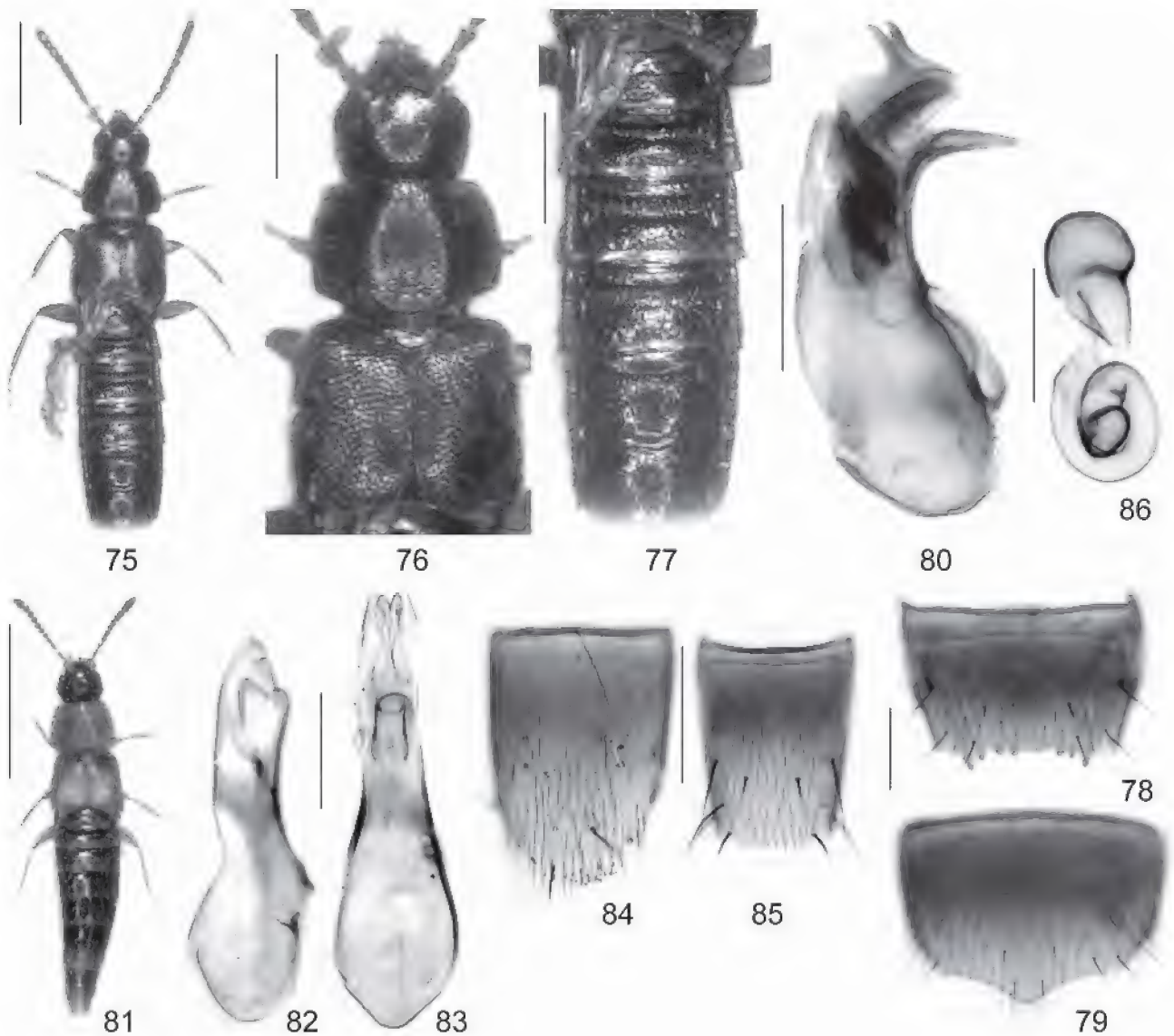
The specific epithet refers to the short tarsi, one of the characters distinguishing this species from similar congeners.

Description

Habitus as in Fig. 75. Body length 4.3 mm.

Coloration: head and abdomen blackish-brown; pronotum and elytra dark-brown with slightly paler margins; legs and antennae reddish.

Head with dense, shallow, and moderately fine punctation; microsculpture distinct, particularly in posterior dorsal area; eyes rather large and distinctly convex, slightly longer than postocular region in dorsal view (Fig. 76). Antenna weakly incrassate apically; antennomere IV approximately as wide as long, X weakly transverse.



Figs. 75–86. *Silusa brevipes* n. sp. (75–80) and *Acrotona ochricollis* (Scheerpeltz) (81–86). – **75**, **81**. Habitus. **76**. Forebody. **77**. Abdomen. **78**. Male tergite VIII. **79**, **84**. Male sternite VIII. **80**, **82**, **83**. Median lobe of aedeagus in lateral and ventral view. **85**. Female tergite VIII. **86**. Spermatheca. – Scale bars: 1.0 mm (75, 81), 0.5 mm (76, 77), 0.2 mm (78–80, 84, 85), 0.1 mm (82, 83, 86).

Pronotum almost 1.4 times as wide as long and 1.4 times as wide as head; posterior angles marked; punctation dense and fine, much finer than that of head, barely noticeable in the pronounced microreticulation (Fig. 76).

Elytra approximately 1.2 times as wide, and at suture approximately 1.1 times as long as pronotum; punctation dense and fine, but much more distinct than that of head and pronotum; interstices glossy (Fig. 76). Hind wings fully developed. Legs relatively short (metatibia 0.53 mm, metatarsus 0.36 mm); metatarsomere I less than twice as long as broad, barely longer than II.

Abdomen approximately 0.9 times as wide as elytra, widest at segment V; tergites III–V with pronounced anterior impressions, these impressions with conspicuously dense and coarse punctation; punctation of remainder of tergal surfaces moderately dense and distinct on anterior tergites and fine and very sparse on posterior tergites; tergites III–V without appreciable microsculpture; tergites VI–VI with very shallow transverse microsculpture; posterior margin of tergite VII with palisade fringe (Fig. 77).

♂: tergite VII without median tubercle; posterior margin of tergite VIII moderately dentate (Fig. 78); sternite VIII shaped as in Fig. 79; median lobe of aedeagus as in Fig. 80, ventral process sharply bent in lateral view.

Comparative notes

Only two species of the subgenus *Stenusa* Kraatz, 1856 were known from the Western Palaearctic region: the widespread *S. rubra* Erichson, 1839 and the Caucasian *S. areolata* Reitter, 1888 (northeastern Turkey, western Caucasus region). The new species is distinguished from both of them by the finer puncation of the forebody, particularly of the elytra, shorter legs with shorter tarsi (*S. rubra* and *S. areolata*: metatarsomere I approximately 3 times as long as broad and distinctly longer than II), much more densely punctate anterior impressions of the abdominal tergites III–V, the unmodified male tergite VII, the less strongly dentate posterior margin of the male tergite VIII, and the morphology of the aedeagus (ventral process more sharply bent in lateral view; internal structures of different shape). For illustrations of *S. areolata* see Assing (2002).

Distribution and bionomics

The type locality is situated in the Elburz mountain range, northern Iran, some 40 km to the north of Tehran. The holotype was sifted from leaf litter near a stream at an altitude of approximately 2800 m.

Autalia longicornis Scheerpeltz, 1947

Material examined

Iran: **Mazandaran**: 1 ex., Sari county, Mohammadabad, 2.2 km NE Bendela, 36°04'N, 53°10'E, 1530 m, beech forest, 30.V.2008, leg. Pütz (cPüt); 1 ex., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. Pütz (cPüt); 1 ex., Chalus County, 7 km N Makarud, 36°36'N, 51°10'E, beech forest, 1250 m, 3.VI.2008, leg. Pütz (cAss).

Comment

The previously known distribution of *A. longicornis* extended eastwards to Turkey, Cyprus, and Syria (Assing 1997, 2001). The above specimens represent the first records from Iran.

Outachyusa raptoria (Wollaston, 1854)

Material examined

Iran: **Lorestan**: 1 ex., SE Dorud, Saravand, 33°23'N, 49°10'E, 2000 m, 26.VI.2004, leg. Frisch (MNHUB); 1 ex., same locality, 2050 m, 27.VI.2004, leg. Frisch (MNHUB). – **Fars**: 1 ex., Shiraz-Kazerun, 8 km S Qa'emiyeh, Tangeh Chogan, 29°48'N, 51°37'E, 880 m, 8.IV.2006, leg. Frisch & Serri (MNHUB); 1 ex., Sarvestan–Estahban road, Runiz, 29°10'N, 53°46'E, 1770 m, 25.IV.2006, leg. Frisch & Serri (cAss); 1 ex., road Sepidan–Komehr, 3 km NW Sepidan, 30°21'N, 51°57'E, 2850 m, 8.V.2007, leg. Frisch & Serri (MNHUB). – **Kerman**: 1 ex., 100 km E Hajiabad, 4 km W Sorkhan, 28°20'N, 56°51'E, 1430 m, 20.IV.2006, leg. Frisch & Serri (MNHUB); 1 ex., 30 km E Rabor, 2 km to Bagkoyeh, 29°19'N, 57°10'E, 2660 m, 5.V.2007, leg. Frisch & Serri (cAss).

Comment

The distribution of this rather rare species ranges from the Canary Islands to Hong Kong, and it has been reported also from the Afrotropical region (Smetana 2004). The above specimens are the first records from Iran.

Brachyusa concolor (Erichson, 1839)

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., N Takab, 11 km E Takht-e-Soleyman, 36°37'N, 47°19'E, 2300 m, 7.IX.2008, leg. Frisch & Serri (MNHUB).

Comment

Brachyusa concolor has a trans-Palaearctic distribution, but was previously unknown from Iran (Smetana 2004).

Thinonoma atra (Gravenhorst, 1806)

Material examined

Iran: **Azarbayjan-e Gharbi**: 2 exs., road Maku–Bazargan, 6 km NW Avajiq, 39°21'N, 44°05'E, 2390 m, 27.VIII.2008, leg. Frisch & Serri (MNHUB, cAss).

Comment

This species is widespread in the Western Palaearctic region eastwards to Kazakhstan (Smetana 2004). The above specimens represent the first record from Iran.

Falagrioma thoracica (Stephens, 1832)

Material examined

Iran: **Gilan**: 2 exs., Fuman county, Masuleh–Khalkhal road, 4 km NW Masuleh, 37°10'N, 48°59'E, 1400 m, leaf litter sifted, 8.VI.2008, leg. Pütz (cPüt, cAss); 1 ex., Fuman county, below Masuleh, 37°10'N, 49°02'E, 670 m, sifted, 8.VI.2008, leg. Pütz (cAss). – **Mazandaran**: 4 exs., Chalus county, 10 km SE Abbasabad, 36°39'N, 51°12'E, 150 m, small stream, 4.VI.2008, leg. Pütz (cPüt, cAss); 2 exs., Chalus county, Elburz mts., 10 km SE Abbasabad, 36°39'N, 51°11'E, 280 m, leaf litter sifted, 4.VI.2008, leg. Pütz (cPüt); 5 exs., Babol county, 2 km SW Firuz Jah, 36°11'N, 52°39'E, 840 m, small stream, 31.V.2008, leg. Pütz (cPüt, cAss). – **Golestan**: 3 exs., 28 km SE Minu Dasht, Dozeyn, 37°08'N, 55°35'E, 950 m, 4.VI.2006, leg. Frisch & Serri (MNHUB); 3 exs., S Gorgan, 12 km S Nahar Khoran, Ziarat, 36°41'N, 54°28'E, 1200 m, 5.VI.2006, leg. Frisch & Serri (MNHUB).

Comment

This species is apparently rather common in Iran, from where it was only recently reported for the first time (Assing 2007a).

Cordalia obscura (Gravenhorst, 1802)

Material examined

Iran: **Mazandaran**: 1 ex., 20 km SW Pol-e Sefid, 2 km NE Allahband, 36°03'N, 52°57'E, 920 m, 8.VI.2006, leg. Frisch & Serri (MNHUB); 3 exs., Sari county, Mohammadabad, 1 km W Afra Chal, 36°14'N, 53°14'E, 520 m, leaf litter sifted, 30.V.2008, leg. Pütz (cPüt, cAss); 7 exs., Babol county, 2 km SW Firuz Jah, 36°11'N, 52°39'E, 840 m, small stream, 31.V.2008, leg. Pütz (cPüt, cAss); 1 ex., Sari county, Mohammadabad, 2.2 km NE Bendela, 36°04'N, 53°10'E, 1530 m, beech forest, 30.V.2008, leg. Pütz (cAss); 4 exs., Sari county, Mohammadabad, NE Sangdeh, 36°04'N, 53°10'E, 1530 m, beech forest, 29.V.2008, leg. Pütz (cPüt, cAss); 5 exs., Tonekabon county, 4.5 km SW Khanian, Sehezar forest, 36°33'N, 50°50'E, 940 m, leaf litter sifted, 5.VI.2008, leg. Pütz (cPüt, cAss). – **Tehran**: 1 ex., Ahar, 2220 m, 18.VI.2004, leg. Serri (HMIM). – **Semnan**: 3 exs., Shahrud–Mojen road, 2 km SE Tash, 36°33'N, 54°40'E, 2190 m, 24.V.2006, leg. Frisch & Serri (MNHUB, cAss).

Comment

Like the preceding species, *C. obscura* is evidently common in Iran, but was only recently reported from there for the first time (Assing 2007a).

Cordalia fortepunctata Assing, 2006

Material examined

Iran: **Mazandaran**: 1 ex., Nur county, W Baladeh, 36°14'N, 51°27'E, 3160 m, sifted, 1.VI.2008, leg. Pütz (cPüt). – **Esfahan**: 14 exs., S Semirom, Komeh, 31°01'N, 51°35'E, 2810 m, 11.V.2007, leg. Frisch & Serri (MNHUB, cAss). – **Fars**: 3 exs., road Semirom–Abadeh, 22 km NE Khosrow-Shirin, 30°59'N, 52°07'E, 2480 m, 13.V.2007, leg. Frisch & Serri (MNHUB, cAss); 2 exs., SE Sepidan, pass Sarbast-Dalkhon, 30°16'N, 52°04'E, 2290 m, 9.V.2007, leg. Frisch & Serri (MNHUB, cAss).

Comment

The known distribution of *C. fortepunctata* is confined to Turkey and Iran; for a map see Assing (2007a).

Tropimenelytron mirabile (Eppelsheim, 1884)

Material examined

Iran: **Mazandaran**: 1 ex., Chalus County, 7 km N Makarud, 36°36'N, 51°10'E, beech forest, 1250 m, 3.VI.2008, leg. Pütz (cPüt); 1 ex., Sari county, Mohammadabad, NE Sangdeh, 36°04'N, 53°10'E, 1530 m, beech forest, 29.V.2008, leg. Pütz (cPüt); 1 ex., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°35'E, 1460 m, small stream, 6.VI.2008, leg. Pütz (cAss).

Comment

This species had been attributed to the genus *Alevonota* Thomson, 1858, until it was recently moved to *Tropimenelytron* Pace, 1983. It was previously known only from Azerbaijan (Assing & Wunderle 2008).

Tropimenelytron tuberiventre (Eppelsheim, 1880)

Material examined

Iran: **Mazandaran**: 4 exs., Sari county, Mohammadabad, NE Sangdeh, 36°04'N, 53°10'E, 1530 m, beech forest, 29.–30.V.2008, leg. Pütz (cPüt, cAss); 2 exs., Tonekabon county, 4.5 km SW Khanian, Sehezar forest, 36°33'N, 50°50'E, 940 m, leaf litter sifted, 5.VI.2008, leg. Pütz (cPüt, cAss); 1 ex., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. Pütz (cPüt); 1 ex., Chalus County, 7 km N Makarud, 36°36'N, 51°10'E, beech forest, 1250 m, 3.VI.2008, leg. Pütz (cPüt, cAss).

Comment

Tropimenelytron tuberiventre is apparently subject to a pronounced eye and wing polymorphism. In some specimens from Iran, the eyes are remarkably large and bulging, distinctly more so than in material seen from elsewhere (Italy, northeastern Turkey, western Caucasus region), and the elytra are broader and longer. However, no differences were observed in the primary and secondary sexual characters. The species has a remarkably discontinuous distribution, which previously included Italy and the Caucasus region (northeastern Anatolia, Georgia, southwestern Russia, and Armenia) (Assing 2005d). The above specimens represent the first records from Iran.

Aloconota gregaria (Erichson, 1839)

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., pass 25 km W Mahabad, 36°45'N, 45°32'E, 2080 m, 2.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex., NW Piranshahr, 7 km road to Hashkan, 36°48'N, 45°05'E, 1600 m, 2.IX.2008, leg. Frisch & Serri

(MNHUB). – **Kordestan**: 1 ex., 5 km S Qorveh, Veihaj, 35°07'N, 47°46'E, 2060 m, 5.IX.2008, leg. Frisch & Serri (MNHUB). – **Golestan**: 3 exs., 28 km SE Minu Dasht, Dozeyn, 37°08'N, 55°35'E, 950 m, 4.VI.2006, leg. Frisch & Serri (MNHUB). – **Razavi Khorasan**: 1 ex., Emam Qoli–Kapkan road, 17 km E Emam Qoli, Aghmazar, 37°19'N, 58°41'E, 1850 m, 31.V.2006, leg. Frisch & Serri (MNHUB); 2 exs., Quchan–Bajgiran road, 6 km E Emam Qoli, Inche, 37°22'N, 58°34'E, 1750 m, 30.V.2006, leg. Frisch & Serri (MNHUB).

Comment

This species is widespread and common in the Western Palaearctic region eastwards to Middle Asia. It is not listed for Iran by Smetana (2004), but was reported from Ispahan and Fars by Jarrige (1971). I have seen hundreds of specimens from numerous Iranian localities in material from the collections of the MNHUB; the above specimens represent a small sample found only in the latest shipment of material.

Taxicera deplanata (Gravenhorst, 1802)

Material examined

Iran: **Mazandaran**: 2 exs., Ramsar, road to Jannatrudbar, 36°49'N, 50°39'E, 1050 m, 29.VII.2005, leg. Frisch & Serri (MNHUB, cAss); 1 ex., Tonekabon, Dohezar, 36°40'N, 50°50'E, 400 m, 27.VII.2005, leg. Frisch & Serri (MNHUB).

Comment

The previously known distribution of *T. deplanata*, apparently a ponto-Mediterranean species, extended eastwards to Georgia and Turkey (Assing 2007f, Kapp 2005). The above specimens represent new country records.

Nehemitropia lividipennis (Mannerheim, 1830)

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., road Khoy–Qotur, 2 km W Qotur, 38°29'N, 44°29'E, 1950 m, 29.VIII.2008, leg. Frisch & Serri (MNHUB); 1 ex., road Shot–Siyah Chesmeh, pass SW Shot, 39°08'N, 44°38'E, 1760 m, 28.VIII.2008, leg. Frisch & Serri (MNHUB). – **Kordestan**: 1 ex., 27 km SW Saqqez, 2 km SW Mir Deh, 36°08'N, 46°02'E, 1600 m, 3.IX.2008, leg. Frisch & Serri (cAss). – **Zanjan**: 1 ex., 15 km SE Zanjan, 18 km NE Bonab, 36°42'N, 48°45'E, 2050 m, 25.VIII.2008, leg. Frisch & Serri (MNHUB).

Comment

This common cosmopolitan species was previously reported from Iran only once (Boháč 1981) (as *N. sordida*).

Acrotona obfuscata (Gravenhorst, 1802)

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., road Khoy–Qotur, 32 km W Khoy, 38°28'N, 44°29'E, 1540 m, 29.VIII.2008, leg. Frisch & Serri (MNHUB); 1 ex., N Takab, 16 km E Takht-e-Soleyman, 36°36'N, 47°21'E, 2270 m, 7.IX.2008, leg. Frisch & Serri (cAss).

Comment

Acrotona obfuscata is widespread, but not common, in the Western Palaearctic region and has been reported also from West Siberia (Smetana 2004). The above specimens represent the first records from Iran.

Acrotona ochricollis (Scheerpeltz, 1963)
(Figs. 81–86)

Material examined

Iran: **North Khorasan**: 5 exs., road Shirvan–Esfarayen, 31 km NE Esfarayen, Sarchesmeh, 37°08'N, 57°46'E, 1730 m, 2.VI.2006, leg. Frisch & Serri (MNHUB, cAss).

Comment

The original description of this species is based on three type specimens in poor condition, a male holotype and two female paratypes (Scheerpeltz 1963). The types were not examined, but, based on the conspicuous coloration, there is little doubt that the present interpretation is correct. The species is a true *Acrotona* and belongs to the group of species allied to *A. pygmaea* (Gravenhorst, 1802), as is suggested by the oxypodoid body shape, the chaetotaxy (absence of long black setae on the tibiae and on the abdomen), the elongated metatarsomere I, and the morphology of the aedeagus. Note that *Acrotona* sensu Smetana (2004) is a mixture of various, partly only distantly related lineages.

Redescription

Habitus as in Fig. 81. Body length 2.0–2.7 mm.

Coloration distinctive: head dark-brown to blackish; pronotum bright reddish; elytra yellowish, sometimes weakly infuscate anteriorly; abdomen dark-brown, with the posterior margins of segments III–VI, the posterior ⅓ of segment VII, and the posterior half of segment VIII reddish-yellow; legs yellowish; antennae dark-brown, with the basal 2–3 antennomeres yellowish.

Head transversely wedge-shaped, i. e., distinctly dilated behind eyes; punctation very fine; microsculpture barely noticeable or absent; eyes approximately as long as postocular region in dorsal view. Antenna with antennomere III distinctly oblong and slightly shorter than II; IV approximately as long as broad; V–X of gradually increasing width and increasingly transverse; XI approximately as long as the combined length of IX and X.

Pronotum 1.30–1.35 times as wide as long and 1.35–1.40 times as wide as head, widest in posterior half; posterior angles weakly marked; punctation fine and very dense.

Elytra approximately 0.9 times as long as pronotum; punctation fine and very dense. Hind wings fully devel-

oped. Tibiae with very inconspicuous mid-setae. Metatarsomere I approximately as long as the combined length of II and III.

Abdomen narrower than elytra, widest at base, and distinctly tapering posteriad; punctation fine and rather dense on anterior tergites, fine and very sparse on posterior tergites; microsculpture indistinct or absent; lateral margins without conspicuous long dark setae.

♂: sternite VIII oblong, its posterior margin convex (Fig. 84); median lobe of aedeagus as in Figs. 82–83.

♀: tergite VIII posteriorly truncate in the middle (Fig. 85); sternite VIII weakly oblong, its posterior margin truncate; spermatheca as in Fig. 86.

Comparative notes

Acrotona ochricollis is distinguished from all its Western Palaearctic congeners by the conspicuous coloration alone. In addition, it is characterised by the primary and secondary sexual characters.

Distribution and bionomics

The species was previously known only from the type locality in Afghanistan: "Grotte Pialéh (Nouristan)" (Scheerpeltz 1963). The specimens listed above were collected in North Khorasan province, northeastern Iran, at an altitude of 1730 m.

Atheta longicornis (Gravenhorst, 1802)

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., 20 km W Salmas, 10 km W Kuzeh Rash, 38°11'N, 44°31'E, 2100 m, 31.VIII.2008, leg. Frisch & Serri (cAss). – **Kordestan**: 1 ex., pass 21 km E Sanandaj, 35°20'N, 47°09'E, 2100 m, 5.IX.2008, leg. Frisch & Serri (MNHUB); 5 exs., 5 km S Qorveh, Veihaj, 35°07'N, 47°46'E, 2060 m, 5.IX.2008, leg. Frisch & Serri (MNHUB, cAss). – **Mazandaran**: 1 ex., Kuh-e Damavand, Nandel, 36°01'N, 52°13'E, 1660 m, 25.VII.2005, leg. Frisch & Serri (MNHUB).

Comment

This common and widespread species is not listed for Iran by Smetana (2004), although it was recorded from there (Novshar) by Jarrige (1971). It was also reported by Ghahari et al. (2009a), but this record should be considered doubtful; for details see the introduction.

Atheta triangulum (Kraatz, 1856)

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., pass 25 km W Mahabad, 36°45'N, 45°32'E, 2080 m, 2.IX.2008, leg. Frisch & Serri (MNHUB); 3 exs., N Takab, 8 km E Takht-e-Soleyman, 36°36'N, 47°18'E, 2210 m, 7.IX.2008, leg. Frisch & Serri (MNHUB, cAss). – **Kordestan**: 1 ex., pass 10 km NE Baneh, 36°04'N, 45°59'E, 1920 m, 3.IX.2008, leg. Frisch & Serri (MNHUB). – **Semnan**: 11 exs., Shahrud–Mojen road, 2 km SE Tash, 36°33'N, 54°40'E, 2190 m, 24.V.2006, leg. Frisch & Serri (MNHUB, cAss).

Comment

The distribution of *A. triangulum* ranges from the Canary Islands eastwards to Middle Asia, but the species was previously unknown from Iran (Smetana 2004).

Platyola balcanica (Gravenhorst, 1802)

Material examined

Iran: **Mazandaran**: 1 ex., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. Pütz (cPüt).

Comment

The previously known distribution of this ponto-Mediterranean species extended from Turkey northwestwards to southeastern Central Europe, with a doubtful record also from Kazakhstan (Assing 2009j). The above specimen represents the first record from Iran.

Zyras haworthi (Stephens, 1832)

Material examined

Iran: **Mazandaran**: 1 ex., Sari county, Mohammadabad, E Qolqol, 36°10'N, 53°16'E, 920 m, sifted, 30.V.2008, leg. Pütz (cPüt).

Comment

According to Smetana (2004), *Z. haworthi* has been reported from various parts of Europe and North Africa, but was unknown from Iran.

Zyras collaris (Paykull, 1800)

Material examined

Iran: **Mazandaran**: 1 ex., Chalus county, N Keldardasht, 36°36'N, 51°10'E, 1250 m, beech forest, 3.VI.2008, leg. Pütz (cPüt).

Comment

This widespread, but rather rare species was previously known from Europe and North Africa, but had not been recorded from Iran (Smetana 2004).

Pella lugens (Gravenhorst, 1802)

Material examined

Iran: **Mazandaran**: 1 ex., Sari county, Mohammadabad, 2.2 km NE Bendela, 36°04'N, 53°10'E, 1530 m, beech forest, 30.V.2008, leg. Pütz (cPüt).

Comment

The distribution of *P. lugens* includes most of the Western Palaearctic region and Middle Asia (SMETANA 2004). The above specimen represents the first record from Iran.

Drusilla canaliculata (Fabricius, 1787)

Material examined

Iran: **Azarbayjan-e Gharbi**: 2 exs., 25 km SE Siyah Chesmeh, Kord Kandi, 38°55'N, 44°28'E, 1880 m, 28.VIII.2008, leg. FRISCH & SERRI (MNHUB); 2 exs., road Maku–Bazargan, 3 km NW Avajiq, 39°21'N, 44°07'E, 2170 m, 27.VIII.2008, leg. FRISCH & SERRI (MNHUB, cAss); 2 exs., road Tabriz–Marand, 3 km N Ivand, 38°22'N, 46°06'E, 1700 m, 26.VIII.2008, leg. FRISCH & SERRI (MNHUB, cAss); 1 ex., road Tabriz–Marand, 4 km S Ivand, 38°18'N, 46°08'E, 1560 m, 26.VIII.2008, leg. FRISCH & SERRI (MNHUB). – **Mazandaran**: 2 exs., Tonekabon county, 4.5 km SW Khanian, Sehezar forest, 36°33'N, 50°50'E, 940 m, leaf litter sifted, 5.VI.2008, leg. PÜTZ (cPüt, cAss).

Comment

This widespread and common trans-Palaearctic species was first reported from Iran by ASSING (2005c); for additional records see ASSING (2008a).

Drusilla alutacea Reitter, 1901

Material examined

Iran: **Mazandaran**: 1 ex., Babol county, 2 km SW Firuz Jah, 36°11'N, 52°39'E, 840 m, small stream, 31.V.2008, leg. PÜTZ (cPüt). – **Razavi Khorasan**: 1 ex., 27 km SW Chanaran, SW Frizi, 36°28'N, 58°57'E, 1690 m, 29.V.2006, leg. FRISCH & SERRI (MNHUB).

Comment

The distribution of *D. alutacea* is confined to Middle Asia. It was only recently reported from Iran (Mazandaran province) for the first time (ASSING 2008a).

Drusilla heydeni (Eppelsheim, 1887)

Material examined

Iran: **Razavi Khorasan**: 2 exs., Sah Jahan mts., Mareshk, 36°48'N, 59°33'E, 1800 m, 26.V.2006, leg. FRISCH & SERRI (MNHUB, cAss).

Comment

This Middle Asian species was recently reported from Iran (Mazandaran and North Khorasan provinces) for the first time (ASSING 2008a).

Drusilla bulbata Assing, 2008
(Fig. 105)

Material examined

Iran: **Mazandaran**: 7 exs., Chalus county, 10 km SE Abbasabad, 36°39'N, 51°12'E, 150 m, small stream, 4.VI.2008, leg. PÜTZ (cPüt, cAss); 4 exs., Chalus county, N Keldardasht, 36°36'N, 51°10'E, 1250 m, beech forest, 3.VI.2008, leg. PÜTZ (cPüt, cAss); 1 ex., Chalus county, Elburz mts., 10 km SE Abbasabad, 36°39'N, 51°11'E, 280 m, leaf litter sifted, 4.VI.2008, leg. PÜTZ (cPüt).

Comment

This recently described species was previously known only from the environs of Alamdeh in Mazandaran province (ASSING 2008a).

Drusilla puetzi **n. sp.**
(Figs. 87–95, 105)

Type material

Holotype ♀: "Iran, Prov. Mazandaran [IR08-04A], Sari County, Mohammadabad, Elburz Mts., N-Slope, 1 km W Afra Chal, 36°14'11.9"N, 53°13'61.0"E [recte: 36°14.119'N, 53°13.61'E], 520 m, small stream, leaves sifted, 30.V.2008, leg. A. PÜTZ / Holotypus ♀ *Drusilla puetzi* sp. n. det. V. ASSING 2009" (cAss).

Paratype ♂: "Iran, Prov. Mazandaran [IR08-01], Sari County, Mohammadabad, Elburz Mts., N-Slope, NE Sangdeh, 1533 m, 36°04'06.6"N, 53°09'57.8"E [recte: 36°04.066'N, 53°09.578'E], *Fagus* forest, leaves debris, sifted, 29.V.2008, leg. A. PÜTZ" (cPüt).

Etymology

The species is dedicated to ANDREAS PÜTZ, who collected excellent material containing numerous new species of Staphylinidae, among them *D. puetzi*, in northern Iran during a field trip of only two weeks.

Description

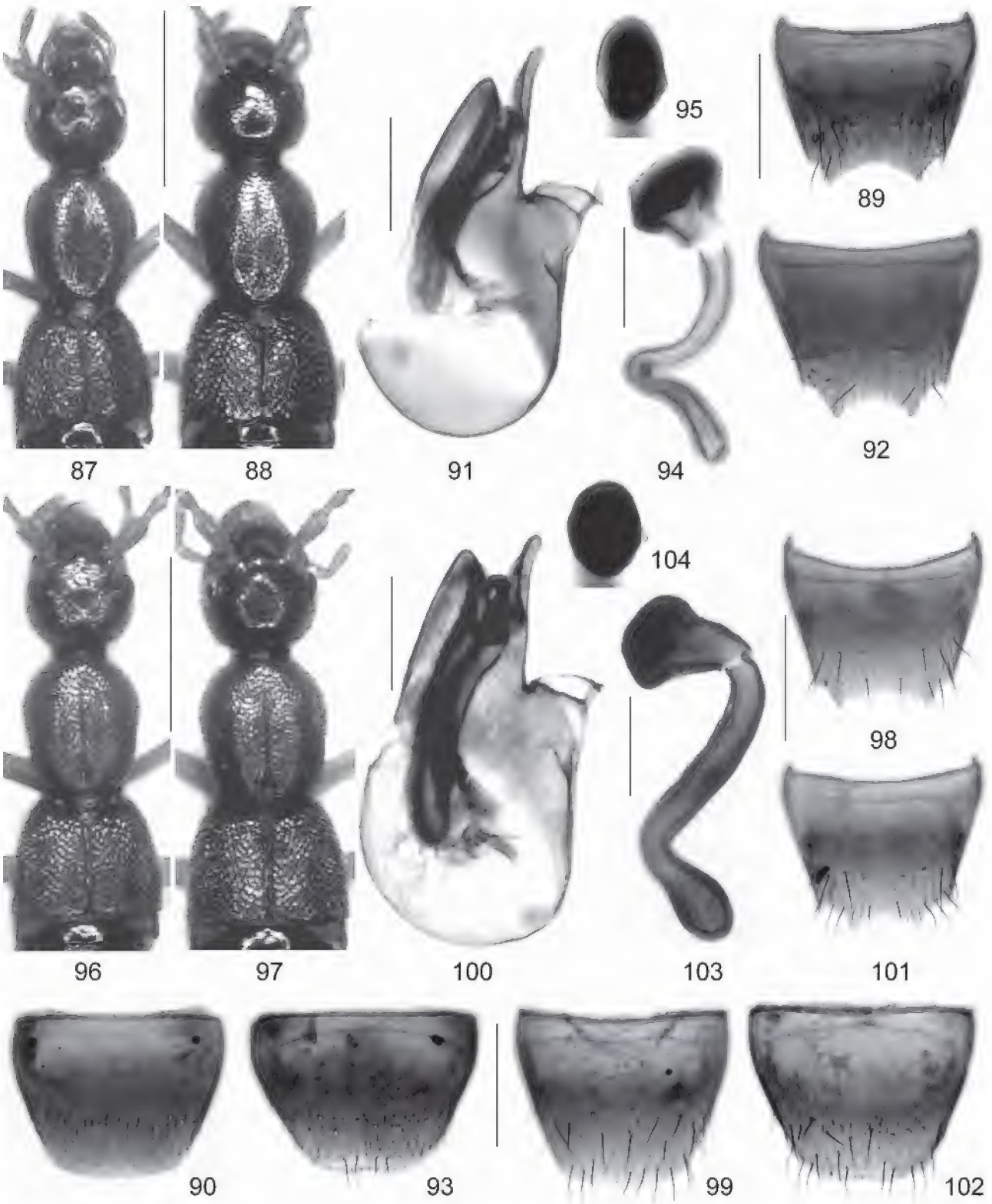
Body length 5.3–5.7 mm.

Coloration: head and abdomen blackish-brown; pronotum and elytra brown; legs dark-yellowish; antennae blackish-brown, with antennomeres I–II and apex of XI reddish.

Head at most with shallow traces of microsculpture, glossy (Figs. 87–88).

Pronotum with the usual sexual dimorphism (Figs. 87–88); punctation dense, moderately coarse, and well-defined; interstices distinctly glossy, without microsculpture.

Elytra approximately 0.65 times as long as pronotum; punctation slightly coarser and denser than that of pronotum; interstices without microsculpture (Figs. 87–88). Hind wings completely reduced.



Figs. 87–104. *Drusilla puetzi* n. sp. (87–95) and *D. subsplendens* n. sp. (96–104). – **87**, **96**. Male forebody. **88**, **97**. Female forebody. **89**, **98**. Male tergite VIII. **90**, **99**. Male sternite VIII. **91**, **100**. Median lobe of aedeagus in lateral view. **92**, **101**. Female tergite VIII. **93**, **102**. Female sternite VIII. **94**, **103**. Spermatheca. **95**, **104**. Distal portion of spermathecal capsule (cross-section). – Scale bars: 1.0 mm (87, 88, 96, 97), 0.5 mm (89, 90, 92, 93, 98, 99, 101, 102), 0.2 mm (91, 100), 0.1 mm (94, 95, 103, 104).

Abdomen approximately 1.2 times as wide as elytra, widest at segment V; punctation of tergites III–V defined, sparse, and with interspersed micropunctation; tergites VI–VII with scattered macro- and interspersed micropunctation; surface without, at most with traces of very shallow microsculpture and very glossy; posterior margin of tergite VII with or without fine rudiment of a palisade fringe; tergite VIII with the usual sexual dimorphism.

♂: pronotum with deep and broad median impression (Fig. 87); tergite VIII and sternite VIII as in Figs. 89–90; median lobe of aedeagus as in Fig. 91.

♀: pronotum shallowly impressed and with fine median sulcus (Fig. 88); tergite VIII and sternite VIII as in Figs. 92–93; capsule of spermatheca with laterally compressed distal portion and with long and conspicuously slender proximal portion (Figs. 94–95).

Comparative notes

The geographically closest congeners with a similar external external morphology are *D. gracilis* (Hochhuth, 1849) from the Talysh mountains in Azerbaijan, *D. persica* Assing, 2005 (Iran: Mazandaran; Fig. 105), and *D. bulbata* Assing, 2008 (Iran: Mazandaran). The new species is readily distinguished from all these species particularly by the shape of the spermathecal capsule (proximal portion laterally compressed; long and slender distal portion). From the Middle Asian *D. ganglbaueri* (Bernhauer, 1906) and *D. heydeni* (Eppelsheim, 1887) it is easily distinguished by the much shorter elytra and the completely reduced hind wings alone. For illustrations of these species see Assing (2005b, 2005c, 2008a).

Distribution and bionomics

The two localities are situated in the Elburz mountain range, some 50–60 km to the south of Sari, northern Iran (Fig. 105). The type specimens were sifted from leaf litter in a beech forest and near a small stream at altitudes of 520 and approximately 1530 m.

Drusilla subsplendens **n. sp.**
(Figs. 96–105)

Type material

Holotype ♀: "Iran, Prov. Gilan [IR08-27], Rasht County, Elburz Mts., N-Slope, 29 km S Rasht, sifted, 37°00'49.4"N, 49°36'30.9"E [recte: 37°00.494'N, 49°36.309'E], 140 m, 7.VI.2008, leg. A. Pütz / Holotypus ♀ *Drusilla subsplendens* sp. n. det. V. Assing 2009" (cAss).

Paratypes: 4♂♂ [1 teneral]: same data as holotype (cPüt, cAss); 1♂: "Iran, Prov. Gilan [IR08-28], Fuman County, Tales Mts., N-Slope, below Masuleh, sifted, small stream, pools, 688 m, 37°09'69.0"N, 49°01'60.8"E [recte: 37°09.69'N, 49°01.608'E], 8.VI.2008, leg. A. Pütz" (cPüt).

Etymology

The specific epithet (Latin, adjective: slightly glossy) alludes to the weak shine of the body, one of the characters distinguishing this species from similar congeners.

Description

Body length 4.8–6.0 mm.

Coloration: head and abdomen blackish-brown; pronotum and elytra brown; legs dark-yellowish; antennae blackish-brown, with antennomeres I–II, base of III, and apex of XI reddish.

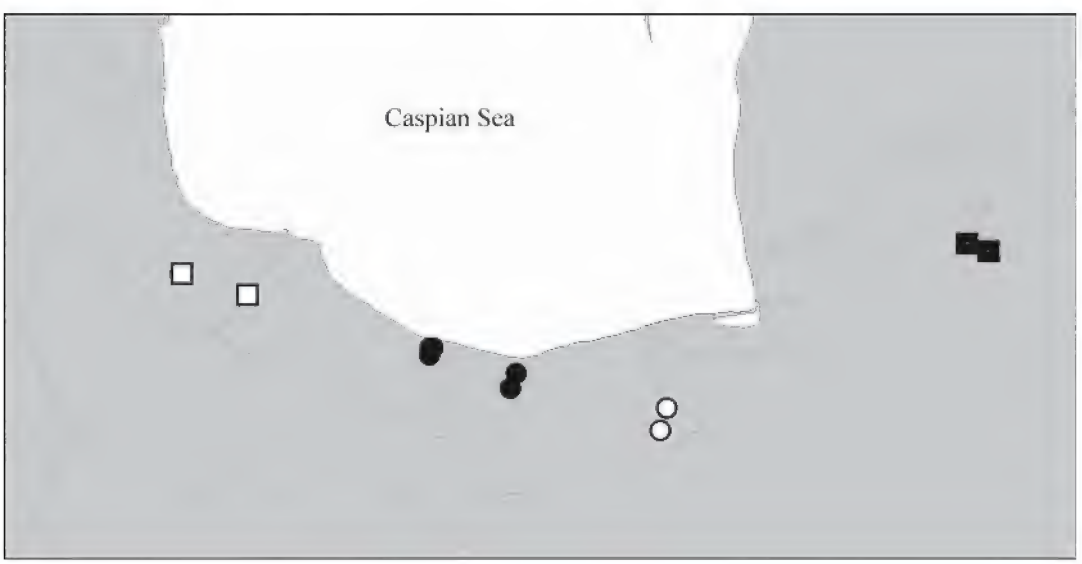


Fig. 105. Distribution of micropterous *Drusilla* species in Iran: *D. subsplendens* n. sp. (□), *D. bulbata* Assing (●), *D. puetzi* n. sp. (○), and *D. persica* Assing (■).

Head with distinct microsculpture, but somewhat glossy (Figs. 96–97).

Pronotum with the usual sexual dimorphism (Figs. 96–97); punctation dense, rather coarse, somewhat granulose, and moderately defined; interstices with distinct microsculpture and subdued shine, particularly in posterior ¾.

Elytra approximately 0.6 times as long as pronotum; punctation coarser and denser than that of pronotum; interstices more shiny than those of pronotum (Figs. 96–97). Hind wings completely reduced.

Abdomen approximately 1.2 times as wide as elytra, widest at segment V; punctation of tergites III–V defined, fine, and moderately sparse, that of tergite VI sparse, and that of tergite VII very sparse; whole surface with distinct transverse microsculpture; posterior margin of tergite VII with or without fine rudiment of a palisade fringe; tergite VIII with the usual sexual dimorphism.

♂: pronotum with deep and broad median impression, in posterior ¾ matt or nearly so (Fig. 96); tergite VIII and sternite VIII as in Figs. 98–99; median lobe of aedeagus as in Fig. 100.

♀: pronotum shallowly impressed and with fine median sulcus, in posterior ¾ with subdued shine (Fig. 97); tergite VIII and sternite VIII as in Figs. 101–102; distal portion of spermathecal capsule oval in cross-section, proximal portion moderately long and moderately slender (Figs. 103–104).

Comparative notes

From all other geographically close and externally similar congeners from Iran and Azerbaijan (*D. gracilis*, *D. persica*, *D. bulbata*, *D. puetzi*), *D. subsplendens* is distinguished by more pronounced microsculpture of the whole body, especially the less shiny pronotum, and by the shape of the spermathecal capsule. For illustrations of the compared species see Assing (2005b, 2005c, 2008a) and the figures of *D. puetzi*.

Distribution and bionomics

The two localities are situated in the valley separating the Elburz from the Tales mountain range and the adjacent southern Tales range, northwestern Iran (Fig. 105). The type specimens were sifted from leaf litter at altitudes of 140 and approximately 690 m.

Tetralaucopora longitarsis (Erichson, 1839)

Material examined

Iran: **Tehran**: 1 ex., Firuzkuh-Semnan, 10 km SE Firuzkuh, Saranza, 35°46'N, 52°52'E, 2060 m, 21.V.2006, leg. Frisch & Serri (cAss). – **Chaharmahal & Bakhtiari**: 12 exs., road Meymand–Semirom, NE Meymand, 31°14'N, 51°18'E, 1840 m, 10.V.2007, leg. Frisch & Serri (MNHUB, cAss). – **Esfahan**: 1 ex., S Semirom, Komeh, 31°01'N, 51°35'E, 2810 m, 11.V.2007, leg. Frisch & Serri (MNHUB). – **Fars**: 1 ex., road Farrashband–Firuzabad, Kherghe, 28°55'N, 52°22'E, 1620 m, 13.IV.2006, leg. Frisch & Serri (MNHUB, cAss). – **Kerman**: 3 exs., Khabr, 28°49'N, 56°20'E, 2060 m, 21.IV.2006, leg. Frisch & Serri (MNHUB, cAss); 4 exs., Orzu'ijeh–Baft road, 28°50'N, 56°39'E, 2150 m, 21.IV.2006, leg. Frisch & Serri (MNHUB, cAss); 3 exs., 22 km E Rabor, 29°17'N, 57°06'E, 2330 m, 5.V.2007, leg. Frisch & Serri (MNHUB, cAss); 1 ex., 17 km E Rabor, 29°17'N, 57°05'E, 2180 m, 5.V.2007, leg. Frisch & Serri (MNHUB).

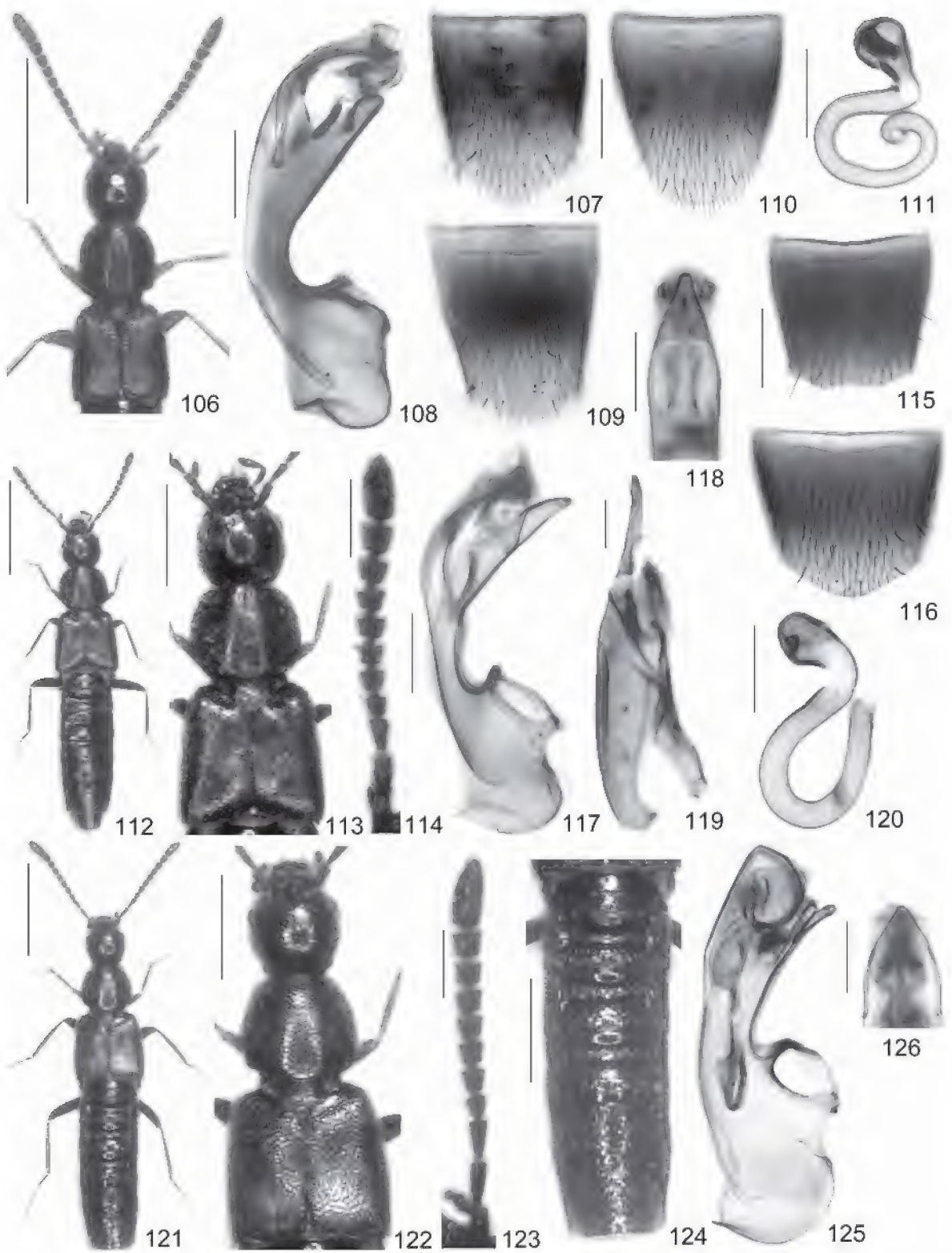
Comment

This widespread species is apparently common in Iran; for additional records and a map see Assing (2007a).

Tetralaucopora rubicunda (Erichson, 1837)

Material examined

Iran: **Azarbayjan-e Gharbi**: 10 exs., road Tabriz–Marand, 3 km N Ivand, 38°22'N, 46°06'E, 1700 m, 26.VIII.2008, leg. Frisch & Serri (MNHUB, cAss); 3 exs., 25 km SE Siyah Chesmeh, Kord Kandi, 38°55'N, 44°28'E, 1880 m, 28.VIII.2008, leg. Frisch & Serri (MNHUB, cAss); 5 exs., road Khoy–Qotur, 2 km W Qotur, 38°29'N, 44°29'E, 1950 m, 29.VIII.2008, leg. Frisch & Serri (MNHUB); 3 exs., N Takab, 3 km NE Takht-e-Soleyman, 36°38'N, 47°14'E, 2270 m, 8.IX.2008, leg. Frisch & Serri (MNHUB); 10 exs., N Takab, 16 km E Takht-e-Soleyman, 36°36'N, 47°21'E, 2270 m, 7.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 2 exs., N Takab, 11 km E Takht-e-Soleyman, 36°37'N, 47°19'E, 2300 m, 7.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 5 exs., N Takab, 8 km E Takht-e-Soleyman, 36°36'N, 47°18'E, 2210 m, 7.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 3 exs., road Shot–Siyah Chesmeh, pass SW Shot, 39°08'N, 44°38'E, 1760 m, 28.VIII.2008, leg. Frisch & Serri (MNHUB); 10 exs., road Shot–Siyah Chesmeh, Qarah Kelisa, 39°06'N, 44°33'E, 1860 m, 28.VIII.2008, leg. Frisch & Serri (MNHUB); 3 exs., Khoy–Siyah Chesmeh road, 9 km W Zar Abad, 38°47'N, 44°32'E, 1970 m, 30.VIII.2008, leg. Frisch & Serri (MNHUB, cAss); 12 exs., road Maku–Bazargan, 3 km NW Avajiq, 39°21'N, 44°07'E, 2170 m, 27.VIII.2008, leg. Frisch & Serri (MNHUB, cAss); 8 exs., 20 km W Salmas, 10 km W Kuzeh Rash, 38°11'N, 44°31'E, 2100 m, 31.VIII.2008, leg. Frisch & Serri (MNHUB, cAss); 1 ex., 35 km W Salmas, 3 km W Kuzeh Rash, 38°08'N, 44°27'E, 2350 m, 31.VIII.2008, leg. Frisch & Serri (MNHUB); 3 exs., 10 km S Ziveh, 37°11'N, 44°53'E, 1810 m, 1.IX.2008, leg. Frisch & Serri (MNHUB, cAss). – **Zanjan**: 6 exs., 15 km SE Zanjan, 18 km NE Bonab, 36°42'N, 48°45'E, 2050 m, 25.VIII.2008, leg. Frisch & Serri (MNHUB, cAss). – **Mazandaran**: 1 ex., Kalardasht, Rudbarak, 36°27'N, 51°04'E, 1790–1950 m, 26.VII.2005, leg. Frisch & Serri (MNHUB). – **Tehran**: 3 exs., Damavand–Firuzkuh road, 30 km SW Firuzkuh, 35°41'N, 52°28'E, 2010 m, 21.V.2006, leg. Frisch & Serri (MNHUB, cAss); 1 ex., Firuzkuh-Semnan, 10 km SE Firuzkuh, Saranza, 35°46'N, 52°52'E, 2060 m, 21.V.2006, leg. Frisch & Serri (MNHUB). – **North Khorasan**: 2 exs., Shirvan–Quchan road, 24 km SSW Faruj, Garmab, 37°03'N, 58°07'E, 1710 m, 1.VI.2006, leg. Frisch & Serri (MNHUB, cAss). – **Semnan**: 72 exs., Shahrud–Mojen road, 2 km SE Tash, 36°33'N, 54°40'E, 2190 m, 24.V.2006, leg. Frisch & Serri (MNHUB, cAss); 7 exs., 17 km N Shahmirzad, 5 km S Chashm, 35°51'N, 53°18'E, 2040 m, 22.V.2004, leg. Frisch & Serri (MNHUB, cAss). – **Razavi Khorasan**: 1 ex., 27 km SW Chanaran, SW Frizi, 36°28'N,



Figs. 106–126. *Tetralaucopora syriaca* (Saulcy) (106–111), *Cousya planicollis* n. sp. (112–120), and *C. mirabilis* n. sp. (121–126). – **106**, **113**, **122**. Forebody. **107**, **116**. Male sternite VIII. **108**, **117**, **125**. Median lobe of aedeagus in lateral view. **109**. Female tergite VIII. **110**. Female sternite VIII. **111**, **120**. Spermatheca. **112**, **121**. Habitus. **114**, **123**. Antenna. **115**. Male tergite VIII. **118**, **126**. Ventral process of aedeagus in ventral view. **119**. Paramere. **124**. Abdomen. – Scale bars: 1.0 mm (108, 112, 121), 0.5 mm (113, 122, 124), 0.2 mm (107, 109, 110, 114–116, 123), 0.1 mm (108, 111, 117–120, 125, 126).

58°57'E, 1690 m, 29.V.2006, leg. Frisch & Serri (MNHUB); 1 ex., 27 km SW Chanaran, Abghad, 36°31'N, 59°04'E, 1380 m, 29.V.2006, leg. Frisch & Serri (MNHUB); 2 exs., SW Shandiz, Zoshg, 36°20'N, 59°11'E, 1750 m, 27.V.2006, leg. Frisch & Serri (MNHUB, cAss). – **Kerman**: 1 ex., Khabr, 28°49'N, 56°20'E, 2060 m, 21.IV.2006, leg. Frisch & Serri (MNHUB).

Comment

Tetralaucopora rubicunda was recently reported from Iran for the first time; for additional records and a map see Assing (2007a).

Tetralaucopora bicolorata Assing, 2007

Material examined

Iran: **Yasd**: 1 ex., SW Taft, Dehbala, 31°34'N, 54°07'E, 2770 m, 15.V.2007, leg. Frisch & Serri (MNHUB). – **Fars**: 1 ex., SE Sepidan, Dalkhon, 30°15'N, 52°06'E, 2100 m, 9.V.2007, leg. Frisch & Serri (MNHUB). – **Kerman**: 1 ex., 100 km E Hajiabad, 4 km W Sorkhan, 28°20'N, 56°51'E, 1430 m, 20.IV.2006, leg. Frisch & Serri (MNHUB); 1 ex., road Bardsir–Baft, 10 km SE Qal'eh Askar, 29°28'N, 56°43'E, 2750 m, 6.V.2007, leg. Frisch & Serri (cAss).

Comment

The above specimens are the first records since the original description, which is based on material from several localities in Fars province (Assing 2007a).

Tetralaucopora syriaca (Saulcy, 1865) (Figs. 106–111)

Material examined

Iran: **Azarbayjan-e Gharbi**: 3 exs., Khoy–Siyah Chesmeh road, 9 km W Zar Abad, 38°47'N, 44°32'E, 1970 m, 30.VIII.2008, leg. Frisch & Serri (MNHUB, cAss); 1 ex., Khoy–Siyah Chesmeh road, 21 km W Zar Abad, 38°44'N, 44°28'E, 2350 m, 30.VIII.2008, leg. Frisch & Serri (MNHUB); 5 exs., Khoy–Siyah Chesmeh road, 17 km W Zar Abad, 38°46'N, 44°29'E, 2640 m, 30.VIII.2008, leg. Frisch & Serri (MNHUB, cAss).

Redescription

Body length 3.3–4.2 mm.

Coloration: head blackish; pronotum dark-brown to blackish-brown; elytra reddish, in posterior ⅔ of lateral portion with more or less extensive, ill-delimited blackish spot, vicinity of scutellum often weakly infuscate; abdomen blackish-brown to blackish, with the posterior margins of segments III–VI, and the posterior ¼ of segments VII–VIII reddish, segments III–V occasionally brownish; legs reddish; antennae dark-brown, with the basal 2–3 antennomeres reddish.

Head approximately as wide as long; punctation fine and rather dense; microsculpture shallow, barely noticeable; eyes as long as, or slightly longer than postocular region in dorsal view. Antenna moderately slender, preapical antennomeres weakly transverse; antennomere XI with sexual dimorphism (Fig. 106).

Pronotum approximately as wide as long and 1.15 times as wide as head, widest in anterior half, weakly tapering posteriad (Fig. 106); punctation fine and very dense; microsculpture indistinct.

Elytra approximately as long as pronotum; posterior margins strongly sinuate near postero-lateral angles (Fig. 106); punctation very dense, less fine than that of pronotum. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV.

Abdomen somewhat narrower than elytra; tergites III–V with pronounced anterior impressions, tergite VI without such impression; punctation extremely fine and dense; microsculpture shallow, but noticeable; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII strongly convex in both sexes (Fig. 109).

♂: antennomere XI slightly constricted in the middle and approximately as long as the combined length of VIII–X; sternite VIII obtusely pointed (Fig. 107); median lobe of aedeagus as in Fig. 108.

♀: antennomere XI not constricted and approximately as long as the combined length of IX–X; posterior margin of sternite VIII broadly convex (Fig. 110); spermatheca as in Fig. 111.

Comment

The type material of *T. syriaca* was not examined, but the material listed above is in good agreement with the original description, particularly regarding the conspicuous coloration of the elytra.

Distribution and bionomics

Tetralaucopora syriaca was previously known only from the two type localities in Lebanon. The above specimens were collected in two localities in northwestern Iran at altitudes of 1970–2640 m.

Cousya planicollis **n. sp.** (Figs. 112–120)

Type material

Holotype ♂: "Iran, Esfahan province, S Semirom: Komeh, 2810 m, N31°00'47" E051°35'28", 11.V.2007, leg. Frisch & Serri / Holotypus ♂ *Cousya planicollis* sp. n. det. V. Assing 2008" (MNHUB).

Paratypes [partly slightly teneral]: 8 exs.: same data as holotype (MNHUB, cAss).

Etymology

The name (Latin, adjective) refers to the conspicuously weakly convex pronotum of the species.

Description

Habitus as in Fig. 112. Body length 2.8–3.6 mm.

Coloration: body, including appendages, uniformly blackish.

Head of subcircular shape, approximately as wide as long; punctation dense and very fine, barely noticeable; integument with shallow microsculpture; eyes almost as long as postocular region in dorsal view (Fig. 113). Antenna rather slender (Fig. 114).

Pronotum approximately 1.15–1.20 times as wide as long and 1.20–1.25 times as wide as head, weakly convex in cross-section; maximal width in, or slightly anterior to middle (Fig. 113); punctation dense and very fine; interstices with shallow microsculpture; pubescence of midline directed posteriad, that of lateral areas directed more or less transversely laterad.

Elytra approximately 1.30–1.35 times as wide, and at suture approximately 1.05 times as long as pronotum, slightly widened posteriad (Fig. 113); punctation dense, somewhat coarser than that of head and pronotum; interstices with distinct microsculpture. Hind wings fully developed. Metatarsomere I approximately as long as the combined length of II–IV or nearly so.

Abdomen approximately 0.80–0.85 times as wide as elytra; segments III–VI of subequal width; tergites III–V with moderately deep anterior impressions; tergite VI with very shallow anterior impression; punctation fine and dense, but less so than that of forebody; microsculpture variable, very shallow to distinct; posterior margin of tergite VII with palisade fringe; posterior margin of tergite VIII moderately convex, in the middle shallowly concave (Fig. 115).

♂: posterior margin of sternite VIII moderately produced, obtusely angled in the middle, and with fine sparse marginal setae (Fig. 116); median lobe of aedeagus as in Figs. 117–118, at base of ventral process with a pair of carinae; apical lobe of paramere long and slender (Fig. 119).

♀: posterior margin of sternite VIII weakly convex and with dense, dark, stout marginal setae; spermatheca as in Fig. 120.

Comparative notes

In the Palaearctic region, the genus *Cousya* Mulsant & Rey, 1875 is currently represented by approximately 35 species. Most of them have not been revised and their generic affiliations require confirmation. Among the few geographically close congeners with a uniformly blackish body, the new species is characterised particularly by the weakly convex pronotum and the distinctive shape of the median lobe of the aedeagus.

Distribution and bionomics

The type locality is situated in the Zagros range, some 180 km to the south of Esfahan, southwestern Iran. The type specimens, some of which are slightly teneral, were collected at an altitude of 2810 m.

Cousya mirabilis **n. sp.**
(Figs. 121–129)

Type material

Holotype ♂: "Iran, Semnan province, Firuzkuh-Semnan: 27 km NW Semnan: Aftar, 1580 m, N35°34'00" E053°08'43", 21.V.2006, lg. Frisch & Serri / Holotypus ♂ *Cousya mirabilis* sp. n. det. V. Assing 2008" (MNHUB).

Etymology

The name (Latin, adjective) refers to the aesthetically remarkable and distinctive appearance of this species.

Description

Habitus as in Fig. 121. Body length 3.8 mm.

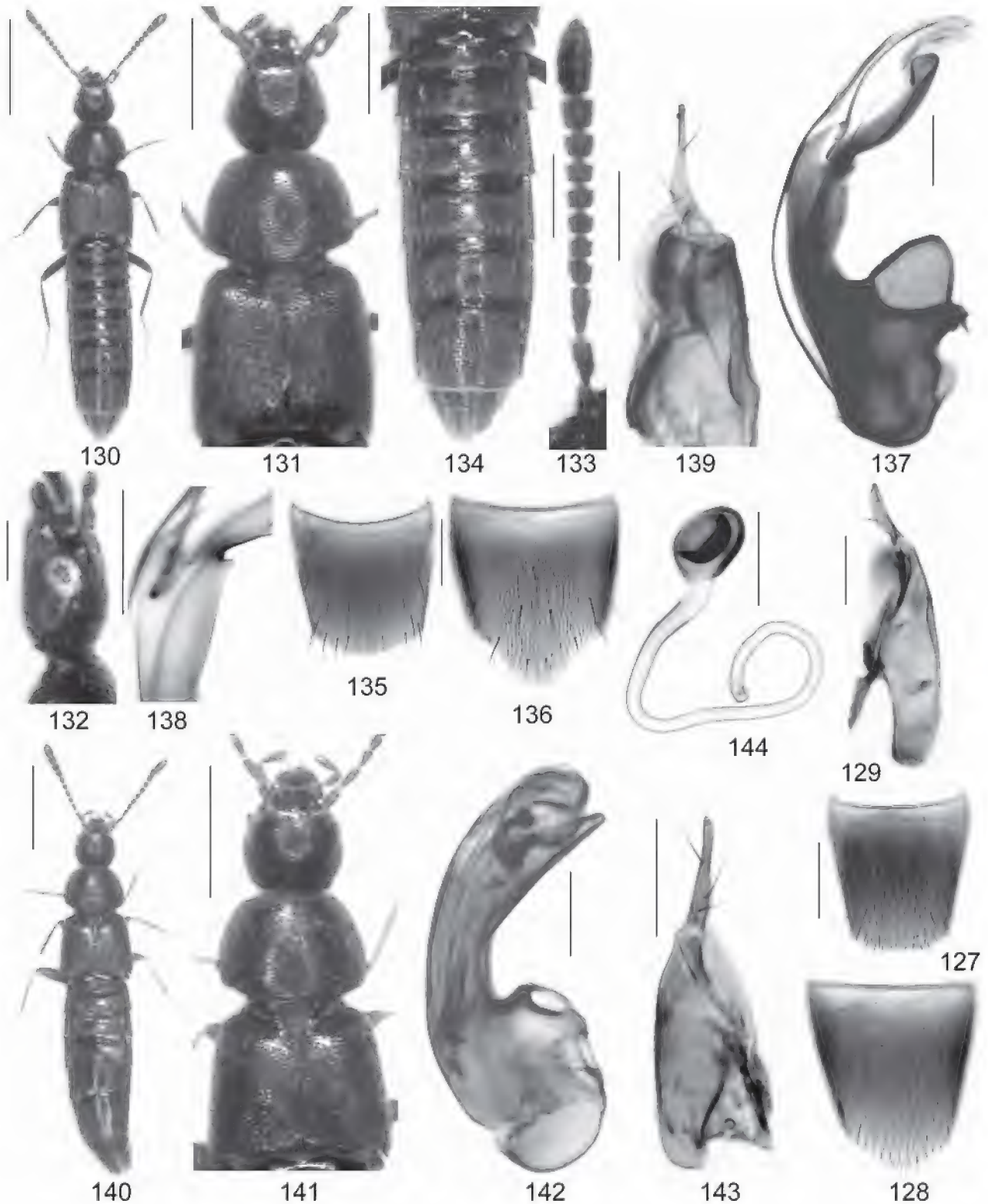
Coloration: head, pronotum, abdomen, and antennae black; elytral disc reddish-yellow, with the lateral and anterior margins extensively blackish; legs blackish-brown, with slightly paler tarsi.

Head weakly oblong, approximately 1.05 times as long as wide; punctation dense and fine, but distinct and well-defined; interstices on average slightly narrower than diameter of punctures, glossy, without distinct microsculpture; eyes large and convex, slightly longer than postocular region in dorsal view (Fig. 122). Antenna slender (Fig. 123); preapical antennomeres weakly transverse; antennomere XI longer than the combined length of IX and X.

Pronotum 1.25 times as wide as head and weakly transverse, 1.08 times as wide as long, widest approximately in the middle (Fig. 122); punctation dense, moderately fine, and well-defined, slightly more distinct than that of head; interstices distinctly narrower than diameter of punctures, without apparent microsculpture; pubescence depressed and short, directed posteriad along midline and predominantly diagonally postero-laterad in lateral areas.

Elytra approximately 1.40 times as wide, and at suture approximately 1.05 times as long as pronotum (Fig. 122); punctation dense, slightly coarser and less defined than that of pronotum; posterior margins distinctly sinuate near posterior angles. Hind wings fully developed. Legs rather long and slender; metatarsus long, approximately 0.9 times as long as metatibia; metatarsomere I elongated, longer than the combined length of the slender metatarsomeres II and III.

Abdomen (Fig. 124) approximately 0.8 times as wide as elytra and conspicuously glossy; segments III–VII of subequal width; tergites III–V with deep anterior impressions, tergite VI without anterior impression; punctation moderately dense, well-defined, and distinctly coarser than that of forebody; interstices on tergites III–VI without, on tergite VII with barely noticeable microsculpture; posterior margin of tergite VII with palisade fringe.



Figs. 127–144. *Cousya mirabilis* n. sp. (127–129), *Oxypoda cuneiceps* n. sp. (130–139), and *O. longiuter* n. sp. (140–144). – **127**, **135**. Male tergite VIII. **128**, **136**. Male sternite VIII. **129**, **139**, **143**. Paramere. **130**, **140**. Habitus. **131**, **141**. Forebody. **132**. Head in lateral view. **133**. Antenna. **134**. Abdomen. **137**, **142**. Median lobe of aedeagus in lateral view. **138**. Basal portion of ventral process of median lobe in lateral view. **144**. Spermatheca. – Scale bars: 1.0 mm (130, 140), 0.5 mm (131, 134, 141), 0.2 mm (127–129, 132, 133, 135, 136, 139, 143), 0.1 mm (137, 138, 142, 144).

♂: posterior margin of tergite VIII convex, in the middle truncate (Fig. 127); posterior margin of sternite VIII obtusely pointed (Fig. 128); median lobe of aedeagus of distinctive shape and with characteristic internal structures (Figs. 125–126); paramere as in Fig. 129.

♀: unknown.

Comparative notes

Cousya mirabilis is distinguished from its congeners by the coloration, combined with a narrow pronotum, the characteristic punctation, and the glossy appearance, as well as by the distinctive morphology of the aedeagus. Other Western Palaearctic congeners with reddish elytra, e. g., *C. picta* (Mulsant & Rey, 1875), *C. bicolor* (Bernhauer, 1900), and *C. araxis* (Bernhauer, 1902), have a pale-coloured and/or distinctly broader pronotum, and a less defined punctation of the head, pronotum, and abdomen.

Distribution and bionomics

The type locality is situated in the southern outliers of the Elburs range, Semnan province, northern Iran. The holotype was collected at an altitude of 1580 m.

Rhomphocallus bernhaueri (Sainte-Claire Deville, 1907)

Material examined

Iran: **Mazandaran**: 2 exs., Sari county, Mohammadabad, NE Sangdeh, 36°04'N, 53°10'E, 1530 m, beech forest, 29.–30.V.2008, leg. Pütz (cPüt, cAss).

Comment

This species is known only from a few localities in the Palaearctic region; for a distribution map see Assing (2003a). The above specimens represent the first record from Iran.

Oxypoda (Oxypoda) opaca (Gravenhorst, 1802)

Material examined

Iran: **Mazandaran**: 4 exs., Sari County, Mohammadabad, NE Sangdeh, 36°04'N, 53°10'E, 1530 m, beech forest, leaf litter sifted, 29.–30.V.2008, leg. Pütz (cPüt, cAss). – **Semnan**: 1 ex., Shahrud–Mojen road, 2 km SE Tash, 36°33'N, 54°40'E, 2190 m, 24.V.2006, leg. Frisch & Serri (cAss). – **Razavi Khorasan**: 2 exs., 27 km SW Chanaran, SW Frizi, 36°28'N, 58°57'E, 1690 m, 29.V.2006, leg. Frisch & Serri (MNHUB).

Comment

This species is widespread and common in the Palaearctic region eastwards to East Siberia and the Russian Far East (Smetana 2004), and has been reported also from North America (Klimaszewski et al. 2006). The above specimens represent the first records from Iran.

Oxypoda (Oxypoda) wankai Bernhauer, 1936

Material examined

Iran: **Esfahan**: 1 ex., 40 km SW Semirom, 31°15'N, 51°24'E, 2080 m, 11.V.2007, leg. Frisch & Serri (MNHUB). – **Kerman**: 4 exs., 12 km N road Kerman–Kuhpaye, Darbasiab, 30°31'N, 57°10'E, 2490 m, 1.V.2007, leg. Frisch & Serri (MNHUB, cAss); 1 ex., 17 km E Rabor, 29°17'N, 57°05'E, 2180 m, 5.V.2007, leg. Frisch & Serri (MNHUB); 2 exs., road Baft–Rabor, 10 km N Bezenjan, 29°20'N, 56°39'E, 2510 m, 4.V.2007, leg. Frisch & Serri (MNHUB, cAss).

Comment

The known distribution of this species ranges from Greece to Iran. The only previous confirmed record from Iran is from Fars province (Assing 2007a).

Oxypoda (Oxypoda) longipes Mulsant & Rey, 1861

Material examined

Iran: **Esfahan**: 67 exs., S Semirom, Komeh, 31°01'N, 51°35'E, 2810 m, 11.V.2007, leg. Frisch & Serri (MNHUB, cAss). – **Fars**: 2 exs., SE Sepidan, Dalkhon, 30°15'N, 52°06'E, 2100 m, 9.V.2007, leg. Frisch & Serri (MNHUB, cAss); 2 exs., road Sepidan–Komehr, 3 km NW Sepidan, 30°21'N, 51°57'E, 2850 m, 8.V.2007, leg. Frisch & Serri (MNHUB, cAss).

Comment

This species is widespread in the Western Palaearctic region and, according to Smetana (2004), has even been reported from the Eastern Palaearctic. In the Middle East, it was previously known only from Turkey, Israel, and Lebanon (Assing 2006a). The above specimens represent the first records from Iran.

Oxypoda (Oxypoda) collaris Saulcy, 1865

Material examined

Iran: **Fars**: 1 ex., road Sepidan–Komehr, 3 km NW Sepidan, 30°21'N, 51°57'E, 2850 m, 8.V.2007, leg. Frisch & Serri (MNHUB).

Iraq: 1 ex. [det. Feldmann], Rawandoz env., 36°30'N, 44°36'E, 1400 m, 14.–22.XI.2007, leg. Reuter (cFel).

Comment

This species was previously known only from central southern Anatolia and the environs of Jerusalem (Assing 2006a). The above specimens represent the first records from Iran and Iraq.

Oxypoda (Podoxya) brevicornis (Stephens, 1832)

Material examined

Iran: **Mazandaran**: 4 exs., Tonekabon county, 4.5 km SW Khanian, Sehezar forest, 36°33'N, 50°50'E, 940 m, leaf litter

sifted, 5.VI.2008, leg. PÜTZ (cPüt, cAss); 1 ex., Sari County, Mohammadabad, NE Sangdeh, 36°04'N, 53°10'E, 1530 m, beech forest, leaf litter sifted, 30.V.2008, leg. PÜTZ (cPüt); 1 ex., Nur county, W Baladeh, 36°15'N, 51°27'E, 2950 m, stream, sifted, 1.VI.2008, leg. PÜTZ (cPüt); 1 ex., Chalus County, 7 km N Makarud, 36°36'N, 51°10'E, beech forest, 1250 m, 3.VI.2008, leg. PÜTZ (cPüt). – **North Tehran**: 1 ex., Shemshak–Dizin road, 7 km E Dizin, 36°02'N, 51°29'E, 2810 m, small stream, 10.VI.2008, leg. PÜTZ (cPüt). – **Golestan**: 1 ex., 28 km SE Minu Dasht, Dozeyn, 37°08'N, 55°35'E, 950 m, 4.VI.2006, leg. FRISCH & SERRI (MNHUB).

Comment

This widespread Palaearctic species was recently reported from Iran (Mazandaran) for the first time (ASSING 2007a).

Oxypoda (Podoxya?) cuneiceps **n. sp.**
(Figs. 130–139)

Type material

H o l o t y p e ♂: "Iran, Kerman province, Bardsir–Baft road: 10 km SE Qual'eh Askar (Mt Lalehzar), 2750 m, N29°27'30" E056°42'48", 06.V.2007, lg. FRISCH & SERRI / Holotypus ♂ *Oxypoda cuneiceps* sp. n. det. V. ASSING 2008" (MNHUB).

P a r a t y p e ♂ [slightly teneral]: same data as holotype (cAss).

Etymology

The name (Latin) is a noun composed of cuneus (wedge) and ceps (head), and refers to the conspicuous shape of the head.

Description

Habitus as in Fig. 130. Body length 3.6–4.0 mm.

Coloration: body, except for the slightly paler abdominal apex, blackish; legs dark-brown, with slightly paler tarsi; antennae blackish.

Head of distinctive shape, somewhat wedge-shaped, dilated posteriad, at posterior margin approximately as wide as long; posterior angles rather marked (Fig. 131); punctation dense and fine; interstices without distinct microsculpture and shiny; postgenae with conspicuously dense, stout, erect, brownish pubescence (well visible in dorsal view); eyes (Fig. 132) rather large, but weakly convex, almost as long as postocular region in dorsal view; ventral and posterior margin of postgenae meeting at distinct angle. Antenna with antennomeres I and II of subequal length; III slender and slightly longer than II; IV approximately as long as wide; V–IX approximately 1.5 times as wide as long and gradually increasing in width; X distinctly longer and less transverse than IX; XI almost as long as the combined length of VIII–X (Fig. 133). Maxillary palpus with palpomere III approximately 2.5 times as long as wide.

Pronotum approximately 1.35 times as wide as long and almost 1.5 times as wide as head; lateral margins converging in anterior half and almost parallel in posterior half (dorsal view), i. e., posterior margin broader than anterior margin (Fig. 131); punctation fine, very dense, and rather ill-defined; interstices without distinct microsculpture; pubescence fine, short, brownish, and depressed; pronotal hypomera not visible in lateral view.

Elytra approximately 1.2 times as wide, and at suture approximately 1.15 times as long as pronotum; posterior margin strongly sinuate near posterior angles (Fig. 131); punctation similar to that of pronotum, but slightly less fine and slightly more defined. Hind wings apparently fully developed. Legs slender; metatarsus almost as long as metatibia; metatarsomere I conspicuously long, distinctly longer than the combined length of II–IV.

Abdomen with segments III–VI of subequal width, segments VII–VIII weakly tapering; tergites III–V anteriorly with very shallow impressions, tergite VI without impression (Fig. 134); punctation fine, very dense, and well-defined, not noticeably sparser on tergite VII than on tergite III; interstices without apparent microsculpture; posterior margin of tergite VII with pronounced palisade fringe.

♂: posterior margin of tergite VIII distinctly convex (Fig. 135); sternite VIII distinctly produced posteriorly, much longer than tergite VIII (Fig. 136); median lobe of aedeagus of highly distinctive and derived morphology, ventral process strongly curved and with basal tooth in lateral view, crista apicalis conspicuously large (Figs. 137–138); paramere, too, of derived morphology (Fig. 139).

♀: unknown.

Comparative notes

This distinctive species is readily separated from all its Western Palaearctic congeners particularly by the conspicuous shape and pubescence of the head, the shape of the male sternite VIII, and the remarkable morphology of the median lobe and of the paramere of the aedeagus. Neither the external nor the male sexual characters suggest closer relationships to any of the species known to me.

Distribution and bionomics

The type locality is situated in Kerman province, approximately 90 km south of Kerman, southern Iran. The type specimens, one of which is somewhat teneral, were collected at an altitude of 2750 m.

Oxypoda (Podoxya?) longiuter **n. sp.**
(Figs. 140–144)

Type material

H o l o t y p e ♂: "Iran, Azarbayjan-e Gharbi, 18 km S Ziveh (Ulugh Dagh), 3120 m, N 37°07'14", E 044°52'26", 01.IX.2008, lg. FRISCH & SERRI / Holotypus ♂ *Oxypoda longiuter* sp. n. det. V. ASSING 2010" (MNHUB).

P a r a t y p e s: 1 ♂, 1 ♀: same data as holotype (MNHUB, cAss).

Etymology

The name (Latin, noun: long tube) alludes to the distinctive morphology of the spermatheca.

Description

Habitus as in Fig. 140. Body length 3.3–3.9 mm.

Coloration: body blackish; legs brown to dark-brown; antennae blackish-brown, basal antennomeres at most only indistinctly paler.

Head weakly transverse and of suborbicular shape, widest behind eyes (Fig. 141); punctation fine, shallow, barely noticeable in the pronounced microsculpture; eyes weakly convex, approximately 0.7–0.8 times as long as postocular region in dorsal view. Antenna of moderate length, relatively slender, and weakly incrassate apically; antennomere III approximately twice as long as broad; antennomere IV weakly oblong; V approximately as wide as long or weakly transverse; VI–X gradually increasing in width and increasingly transverse; X less than 1.5 times as wide as long; XI approximately as long as the combined length of IX and X. Maxillary palpus slender, preapical palpomere approximately 3.5 times as long as wide.

Pronotum approximately 1.35 times as wide as long and about 1.45 times as wide as head, maximal width in posterior half; posterior angles weakly marked (Fig. 141); punctation dense, fine and shallow, barely noticeable in the pronounced microsculpture.

Elytra approximately as long as pronotum; punctation dense, less fine than that of head of pronotum. Hind wings fully developed. Metatarsus almost 0.9 times as long as metatibia; metatarsomere I approximately as long as the combined length of II–IV, or nearly so.

Abdomen widest at segments III–V, gradually tapering posteriad; anterior impressions of tergites III–V shallow; punctation extremely fine and extremely dense; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of sternite VIII strongly produced in the middle; median lobe of aedeagus as in Fig. 142; apical lobe of paramere long and slender (Fig. 143).

♀: posterior margin of sternite VIII convex; spermathecal capsule with conspicuously long and thin proximal portion (Fig. 144).

Comparative notes

Among its congeners, this species is particularly characterised by the dark coloration and by the morphology of the primary sexual characters, especially by the conspicuously long and slender proximal portion of the spermathecal capsule.

Distribution and bionomics

The type locality is situated in northwestern Iran, very close to the borders with Turkey and Iraq. The specimens were collected at an altitude of 3120 m.

Oxypoda (Sphenoma) vicina Kraatz, 1858

Material examined

Iran: **Azarbayjan-e Gharbi**: 2 exs., N Takab, 16 km E Takht-e-Soleyman, 36°36'N, 47°21'E, 2270 m, 7.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex., Takab, 13 km E Takht-e-Soleyman, 36°36'N, 47°20'E, 2450 m, 8.IX.2008, leg. Frisch & Serri (cAss). – **Semnan**: 3 exs., 17 km N Shahmirzad, 5 km S Chashm, 35°51'N, 53°18'E, 2040 m, 22.V.2004, leg. Frisch & Serri (MNHUB, cAss). – **Esfahan**: 1 ex., road Semirom–Shahreza, Koruyeh, 31°42'N, 51°46'E, 2350 m, 12.V.2007, leg. Frisch & Serri (MNHUB).

Comment

Oxypoda vicina was previously attributed to the subgenus *Podoxya* Mulsant & Rey, 1875 (type species: *O. lentula* Erichson, 1837). However, based on external characters (body shape, punctation, microsculpture, length of legs, morphology of the antennae) and particularly the primary and secondary sexual characters (shape of sternite VIII, shape and internal structures of median lobe of aedeagus, morphology of the paramere, shape of the spermatheca), the species is undoubtedly a close relative of *O. abdominalis* (Mannerheim, 1830), the type species of the subgenus *Sphenoma* Mannerheim, 1830. Consequently, *O. vicina* is moved from *Podoxya* to *Sphenoma*.

The species is not listed for Iran by Smetana (2004), although it was reported from there (Azarbayjan) by Jarrige (1971).

Oxypoda (Sphenoma) complicata **n. sp.**
(Figs. 145–151)

Type material

Holotype ♂: "Iran, Azarbayjan-e Gharbi, Khoy–Siyah Chesmeh road: 17 km W Zar Abad, 2640 m, N 38°45'39", E 044°28'35", 30.VIII.2008, lg. Frisch & Serri / Holotypus ♂ *Oxypoda complicata* sp. n. det. V. Assing 2010" (MNHUB).

Paratypes: 1 ♀: same data as holotype (MNHUB); 3 ♀♀: "Iran, Azarbayjan-e Gharbi, 20 km W Salmas: 10 km W Kuzeh Rash, 2100 m, N 38°11'17", E 044°31'24", 30.VIII.2008, lg. Frisch & Serri" (MNHUB, cAss); 1 ♂ [teneral]: "TR – Erzurum, 50 km NW Tortum, 800 m, Çoruh river valley, ca. 40°40'N, 41°15'E, 21.VI.1998, Solodovnikov" (cAss); 1 ♀: "TR – Erzurum, 40 km NW Tortum, 1800 m, Mescit Dağları, pine forest, ca. 40°36'N, 41°23'E, 21.VI.1998, Solodovnikov" (cAss).

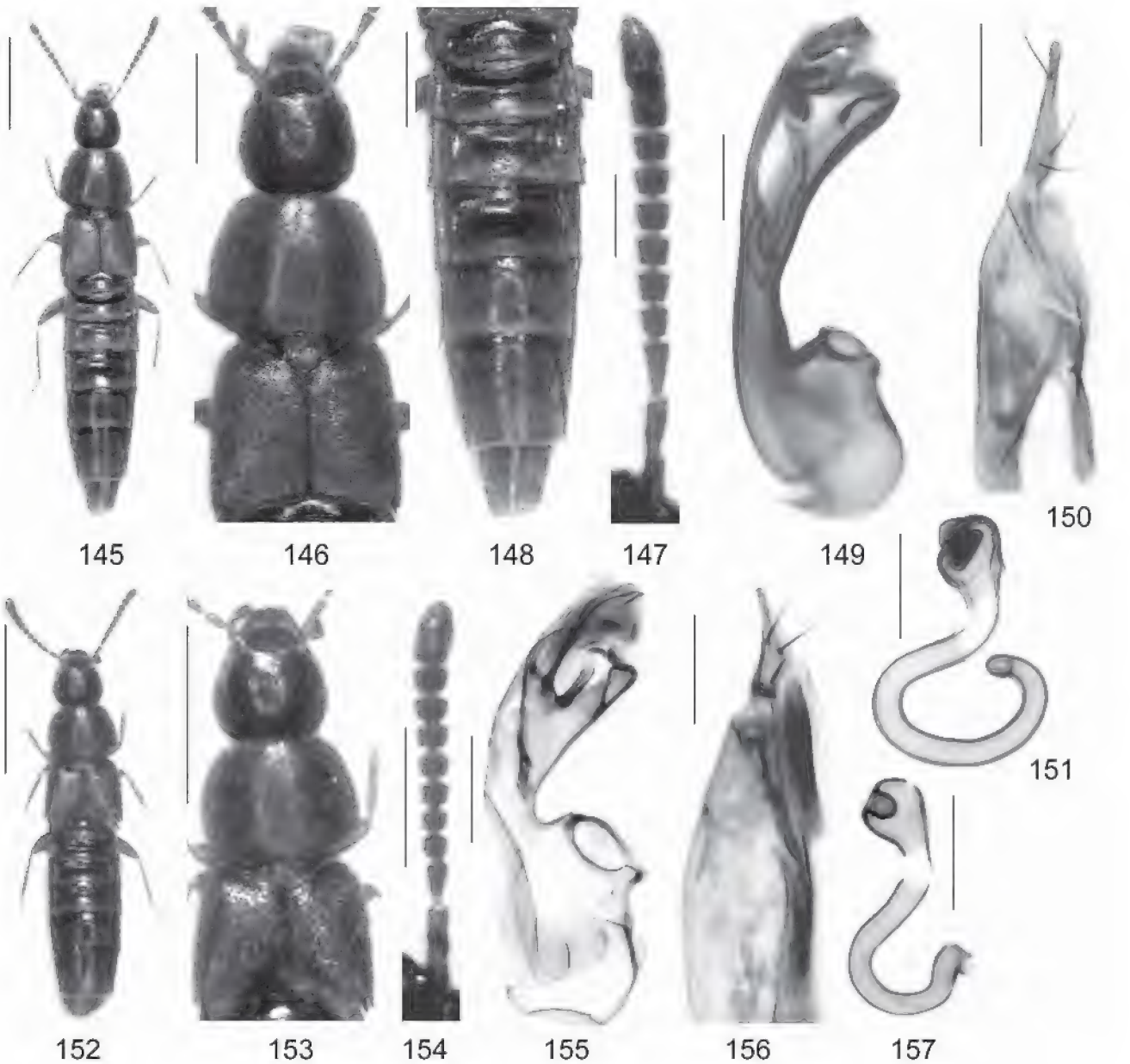
Etymology

The name (Latin, adjective: folded) alludes to the long lateral carinae of the apical half of the aedeagus.

Description

Habitus as in Fig. 145. Body length 4.0–4.9 mm.

Coloration: head brown to dark-brown; pronotum and elytra reddish to reddish-brown; abdomen dark-brown



Figs. 145–157. *Oxypoda complicata* n. sp. (145–151) and *O. frischi* n. sp. (152–157). – **145**, **152**. Habitus. **146**, **153**. Forebody. **147**, **154**. Antenna. **148**. Abdomen. **149**, **155**. Median lobe of aedeagus in lateral view. **150**, **156**. Paramere. **151**, **157**. Spermatheca. – Scale bars: 1.0 mm (145, 152), 0.5 mm (146, 148, 153), 0.2 mm (147, 150, 154), 0.1 mm (149, 151, 155–157).

with the posterior margins of segments III–VI broadly, and the apex (posterior half of segment VII, segments VIII–X) completely reddish; legs reddish; antennae dark-brown, with the basal 2–3 antennomeres reddish.

Head weakly oblong and of ovoid shape; punctation fine and very dense; microsculpture present, but shallow; eyes weakly convex, approximately 0.7–0.8 times as long as postocular region in dorsal view (Fig. 146). Antenna of moderate length, relatively slender, and weakly incrassate apically; antennomere III approximately twice as long as broad; antennomere IV weakly oblong; V approximately as wide as long or weakly oblong; VI–IX gradually increasing in width and weakly transverse; X less than 1.5 times as wide as long; XI slightly longer than combined length of IX and X (Fig. 147). Maxillary palpus slender, preapical palpomere approximately 4 times as long as wide.

Pronotum approximately 1.3 times as wide as long and about 1.5 times as wide as head, maximal width in posterior half; posterior angles obtusely marked (Fig. 146); punctation and microsculpture similar to those of head.

Elytra approximately 1.05 times as wide, and 0.9 times as long as pronotum (Fig. 146); punctation dense, somewhat less fine than that of head and pronotum. Hind wings present. Legs long and slender; metatarsus approximately 0.9 times as long as metatibia; metatarsomere I elongated, longer than the combined length of II–IV.

Abdomen widest at base, gradually tapering posteriad; anterior impressions of tergites III–V shallow; punctation extremely fine and extremely dense; posterior margin of tergite VII with palisade fringe (Fig. 148).

♂: posterior margin of sternite VIII acutely produced in the middle; median lobe of aedeagus as in Fig. 149, ventral process in apical half with pronounced lateral carinae; apical lobe of paramere long and slender (Fig. 150).

♀: posterior margin of sternite VIII broadly convex, in the middle more or less truncate; spermatheca as in Fig. 151.

Comparative notes

Based on the similar external morphology (body shape, punctation, long legs, apically weakly incrassate antennae) and the similar sexual characters (shape and internal structures of the median lobe of the aedeagus; shape of the spermatheca), *O. complicata* is most probably closely related to *O. abdominalis* and its allies. It is distinguished from all of them by the shape and internal structures of the aedeagus, particularly the shape of the apex of the ventral process. In external appearance and the sexual characters, *O. complicata* much resembles *O. ziyaretica* Assing, 2006, but is readily separated from this species by the much smaller crista apicalis and the external structures of the aedeagus. For illustrations of *O. ziyaretica*, *O. abdominalis*, and allied species see Assing (2006a, 2009b).

Distribution and bionomics

The type specimens were collected in four localities in the extreme northwest of Iran and in eastern Turkey at altitudes of 800–2640 m. One of the two Turkish specimens was collected in a pine forest, the other is teneral.

Oxypoda (Bessopora) frischi **n. sp.**
(Figs. 152–157)

Type material

Holotype ♂: "Iran, Azarbayjan-e Gharbi, N Takab: 16 km E Takht-e-Soleyman, 2270 m, N 36°36'24", E 047°21'18", 07.IX.2008, lg. Frisch & Serri / Holotypus ♂ *Oxypoda frischi* sp. n. det. V. Assing 2010" (MNHUB).

Paratypes: 1 ♀: same data as holotype (MNHUB); 2 ♀♀: "Iran, Azarbayjan-e Gharbi, N Takab: 3 km NE Takht-e-Soleyman, 2270 m, N 36°38'08", E 047°14'07", 08.IX.2008, lg. Frisch & Serri" (MNHUB, cAss); 1 ♀: "Iran, North Khorasan Prov., Shirvan–Quchan road: 24 km SSW Faruj: Garmab, 1710 m (Barjovein Mts), N 37°03'01", E 058°06'30", 01.VI.2006, lg. Frisch & Serri" (MNHUB).

Etymology

The species is dedicated to Johannes Frisch, Berlin, who collected the type specimens, as well as a considerable portion of the remaining material which this paper is based on.

Description

Habitus as in Fig. 152. Body length 2.0–2.6 mm.

Coloration: head dark-brown; pronotum and elytra brown; abdomen brown, with segment VI and anterior half of segment VII dark-brown; legs pale-brown; antennae dark-brown, with the apical 2–3 antennomeres pale-brown.

Head suborbicular, approximately as wide as long or weakly transverse, widest behind eyes; punctation extremely fine, barely noticeable in the pronounced microsculpture; eyes weakly convex and rather large, approximately as long as postocular region in dorsal view (Fig. 153). Antenna rather short and distinctly incrassate apically; antennomere III somewhat shorter than II; IV approximately as long as broad; V–X of increasing width and increasingly transverse; XI slightly longer than combined length of IX and X (Fig. 154). Maxillary palpus with preapical palpomere approximately 2.5 times as long as wide.

Pronotum approximately 1.3 times as wide as long and about 1.35 times as wide as head, maximal width in, or slightly behind middle; posterior angles weakly marked (Fig. 153); punctation and microsculpture similar to those of head.

Elytra at posterior margin approximately 1.1 times as wide, and 0.85 times as long as pronotum (Fig. 153); punctation dense and fine, but more distinct than that of head and pronotum. Hind wings of reduced length (less than twice as long as suture when unfolded). Legs relatively short; metatarsus approximately 0.85 times as long as metatibia; metatarsomere I longer than the combined length of II and III, but shorter than the combined length of II–IV.

Abdomen with segments III–V of subequal width, weakly tapering posteriad from segment VI; anterior impressions of tergites III–V shallow; punctation extremely fine and dense; microsculpture pronounced; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of sternite VIII obtusely angled in the middle; median lobe of aedeagus as in Fig. 155, apex of ventral process not bifid in ventral view; apical lobe of paramere rather short (Fig. 156).

♀: posterior margin of sternite VIII broadly convex, with row of dense dark marginal setae; spermatheca as in Fig. 157.

Comparative notes

Based on the similar external morphology (body shape, punctation, microsculpture, apically weakly incrassate

antennae, short elytra) and the similar sexual characters (shape of sternite VIII, shape and internal structures of the median lobe of the aedeagus; morphology of paramere, shape of the spermatheca), *O. frischi* is probably closely related to the wing-dimorphic *O. biformis* Assing, 2006 from central southern Anatolia. It is distinguished from this species by somewhat larger size, larger eyes, and the male primary sexual characters (ventral process of the aedeagus relatively shorter, different shape of apical internal structures). For illustrations of *O. biformis* see Assing (2006b).

Distribution and bionomics

The type specimens were collected in three localities in northwestern and northeastern Iran, suggesting that the species is much more widespread than currently known. However, since the paratype from North Khorasan is a female, the possibility that it refers to a different species cannot be ruled out with certainty. The specimens were collected at altitudes of 1710 and 2270 m.

Oxypoda (Baeoglena) caucasica Bernhauer, 1902 (Figs. 158–161)

Material examined

Iran: **Gilan**: 3 exs. [1 teneral], Rudbar county, 7 km NW Bararu, 36°49'N, 49°38'E, 850 m, 7.VI.2008, leg. A. Pütz (cPüt); 1 ex., Rasht county, Elburz mts., 29 km S Rasht, 37°01'N, 49°36'E, 140 m, sifted, 7.VI.2008, leg. Pütz (cAss). – **Mazandaran**: 2 exs., Babol County, 2 km SW Firuz Jah, 36°11'N, 52°39'E, 840 m, 31.V.2008, leg. Pütz (cPüt, cAss); 13 exs., Sari County, Mohammadabad, NE Sangdeh, 36°04'N, 53°10'E, 1530 m, beech forest, leaf litter sifted, 29.–30.V.2008, leg. Pütz (cPüt, cAss); 3 exs. [2 teneral], Sari county, Mohammadabad, 1 km W Afra Chal, 36°14'N, 53°14'E, 520 m, leaf litter sifted, 29.–30.V.2008, leg. Pütz (cPüt); 2 exs., Sari county, Mohammadabad, E Qolqol, 36°10'N, 53°16'E, 920 m, sifted, 30.V.2008, leg. Pütz (cPüt, cAss); 7 exs., Tonekabon county, 4.5 km SW Khanian, Sehezar forest, 36°33'N, 50°50'E, 940 m, leaf litter sifted, 5.VI.2008, leg. Pütz (cPüt, cAss); 2 exs., Ramsar county, Elburz mts., Eshkatechal, 36°51'N, 50°33'E, 1050 m, sifted, 6.VI.2008, leg. Pütz (cPüt, cAss); 1 ex., Chalus county, Elburz mts., 10 km SE Abbasabad, 36°39'N, 51°12'E, 150 m, leaf litter sifted, 4.VI.2008, leg. Pütz (cPüt); 2 exs., Chalus county, Elburz mts., 10 km SE Abbasabad, 36°39'N, 51°11'E, 280 m, leaf litter sifted, 4.VI.2008, leg. Pütz (cPüt); 4 exs. [1 teneral], Chalus county, N Keldardasht, 36°36'N, 51°10'E, 1250 m, beech forest, 3.VI.2008, leg. Pütz (cPüt); 1 ex., Chalus County, 7 km N Makarud, 36°36'N, 51°10'E, beech forest, 1250 m, 3.VI.2008, leg. Pütz (cPüt); 2 exs., Amol county, 10 km S Amol, 36°23'N, 52°21'E, 2040 m, leaf litter, sifted, 2.VI.2008, leg. Pütz (cPüt).

Comment

The original description of *O. caucasica* is based on an unspecified number of syntypes from "Caucasus: Helenendorf, Martkopi, Meschisches Gebirge, Daghestan, Lenkoran" (Bernhauer 1902), suggesting that the species is widespread in the Caucasus and Caspian Sea region. The type material was not examined, but the details indicated in the description are in good agreement with the material above. The primary sexual characters of specimens from Iran are illustrated in Figs. 158–161. The species was previously unknown from Iran.

Oxypoda caucasica is subject to remarkable variation in the length of the hind wings and the elytra. The vast majority of the above specimens are micropterous; only three specimens have fully developed hind wings. Several specimens are teneral, suggesting that pre-imaginal development takes place in the cold season or in early spring.

Aleochara (Heterochara) clavicornis Redtenbacher, 1849

Material examined

Iran: **Razavi Khorasan**: 1 ex., Sah Jahan mts., Mareshk, 36°48'N, 59°33'E, 1800 m, 26.V.2006, leg. Frisch & Serri (MNHUB).

Comment

Aleochara clavicornis was very recently reported from Iran (Azarbayjan) for the first time (Tronquet 2009).

Aleochara (Baryodma) intricata Mannerheim, 1830

Material examined

Iran: **Kermanshah**: 6 exs., Harsin, Nosratabad, 34°12'N, 47°46'E, 1700 m, 24.VI.2004, leg. Frisch & Serri (MNHUB, cAss).

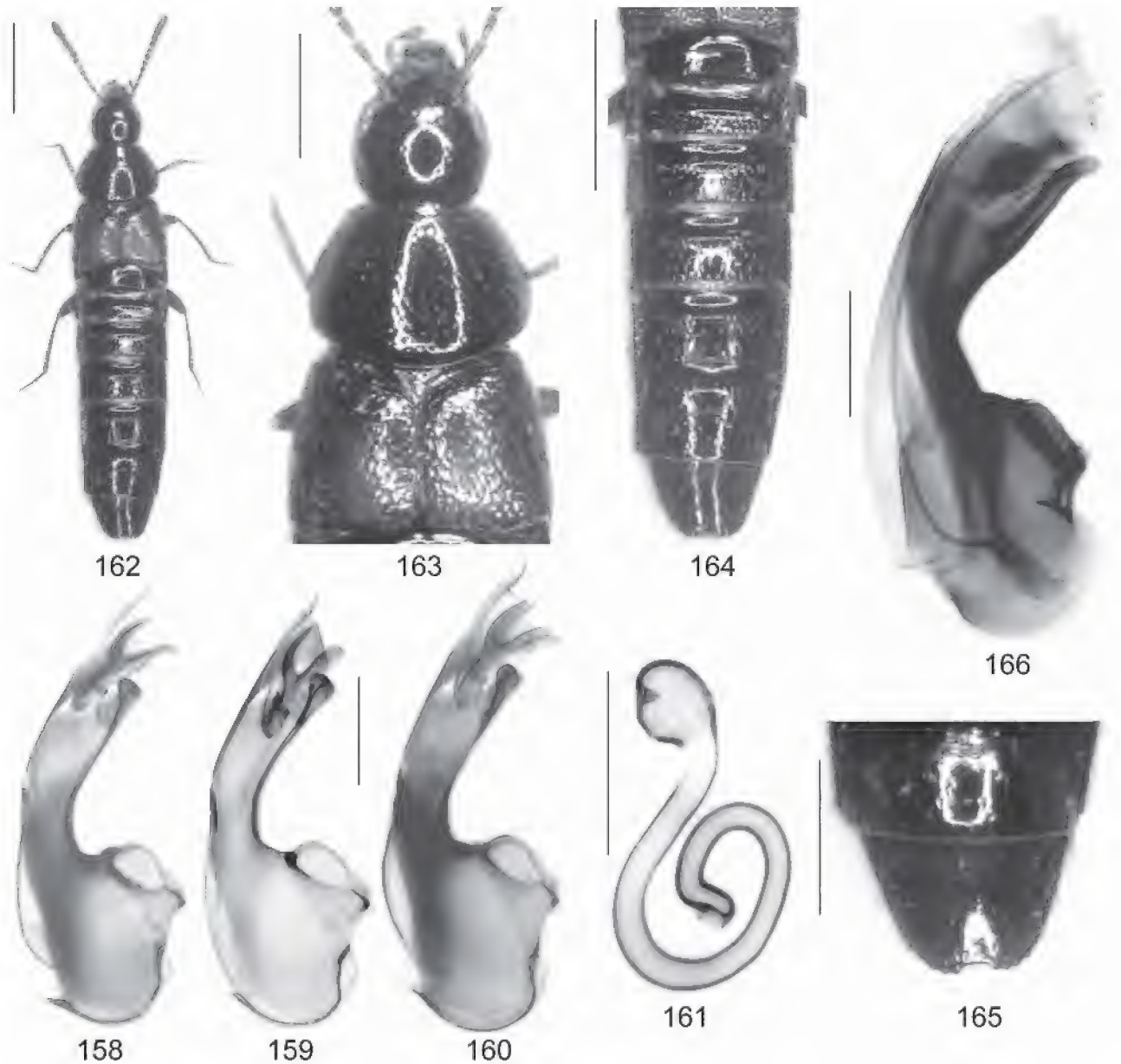
Comment

Likovský (1981) reported this species from several localities in northern Iran; Jarrige (1971) recorded it from "Kalardacht".

Aleochara (Xenochara) haematoptera Kraatz, 1858

Material examined

Iran: **Azarbayjan-e Sharqi**: 1 ex., Kalaybar, 38°51'N, 47°01'E, 1420 m, 9.VIII.2005, leg. Frisch & Serri (MNHUB). – **Azarbayjan-e Gharbi**: 1 ex., Takab, 13 km E Takht-e-Soleyman, 36°36'N, 47°20'E, 2450 m, 8.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex., N Takab, 11 km E Takht-e-Soleyman, 36°37'N, 47°19'E, 2300 m, 7.IX.2008, leg. Frisch & Serri (cAss); 1 ex., road Tabriz–Marand, 3 km N Ivand, 38°22'N, 46°06'E, 1700 m, 26.VIII.2008, leg. Frisch & Serri (MNHUB). – **Ardabil**: 1 ex., N Nir, Alvares, 38°12'N, 47°53'E, 2960 m, 6.VIII.2005, leg. Frisch (MNHUB). – **Gilan**: 2 exs., road Fuman–Masuleh, Gilvande Rud, 37°10'N, 49°04'E, 440 m, 1.VIII.2005, leg. Frisch & Serri (MNHUB). – **Kordestan**: 2 exs., 27 km NW Divandarreh, 9 km NW Zarrineh, 36°04'N, 46°50'E, 2380 m, 4.IX.2008, leg. Frisch & Serri (MNHUB). – **Zanjan**: 1 ex., 15 km SE Zanjan, 18 km NE Bonab, 36°42'N, 48°45'E, 2050 m, 25.VIII.2008, leg. Frisch & Serri (MNHUB). – **Golestan**: 1 ex., Tang Rah, Golestan National Park, 37°24'N, 55°47'E, 490 m, 4.VI.2006,



Figs. 158–166. *Oxypoda caucasica* Bernhauer from Iran (158–161) and *Aleochara serrulata* n. sp. (162–166). – **158–160**, **166**. Median lobe of aedeagus in lateral view. **161**. Spermatheca. **162**. Habitus. **163**. Forebody. **164**. Abdomen. **165**. Male abdominal tergites VII–VIII. – Scale bars: 1.0 mm (162, 164), 0.5 mm (163, 165), 0.2 mm (166), 0.1 mm (158–161).

leg. Frisch & Serri (MNHUB, cAss); 1 ex., S Gorgan, 12 km S Nahar Khoran, Ziarat, 36°41'N, 54°28'E, 1200 m, 5.VI.2006, leg. Frisch & Serri (MNHUB). – **Kermanshah**: 1 ex., Harsin, Nosratabad, 34°12'N, 47°46'E, 1700 m, 24.VI.2004, leg. Frisch & Serri (cAss). – **Lorestan**: 2 exs., SE Dorud, Saravand, 33°23'N, 49°10'E, 2050 m, 27.VI.2004, leg. Frisch (MNHUB). – **Semnan**: 1 ex., Shahrud–Mojen road, 2 km SE Tash, 36°33'N, 54°40'E, 2190 m, 24.V.2006, leg. Frisch & Serri (MNHUB). – **Esfahan**: 2 exs., 10 km E Zefreh, 32°56'N, 52°22'E, 2490 m, 16.V.2007, leg. Frisch & Serri (MNHUB, cAss); 1 ex., 15 km E Zefreh, 32°55'N, 52°23'E, 2660 m, 16.V.2007, leg. Frisch & Serri (cAss); 3 exs., S Fereydun Shahr, Fareydan, 32°47'N, 50°07'E, 2570 m, 30.VI.2004, leg. Frisch & Serri (MNHUB). – **Yasd**: 1 ex., road Taft–Nir, SE Sanich, 31°36'N, 54°00'E, 2480 m, 14.V.2007, leg. Frisch & Serri (MNHUB); 5 exs., pass 18 km NW Nir, 31°34'N, 54°02'E, 2740 m, 14.V.2007, leg. Frisch & Serri (MNHUB, cAss). – **Fars**: 1 ex., road Sepidan–Komehr, 9 km NW Sepidan, 30°22'N, 51°56'E, 2790 m, 8.V.2007, leg. Frisch & Serri (MNHUB); 2 exs., road Sepidan–Komehr, 3 km NW Sepidan, 30°18'N, 51°58'E, 2510 m, 8.V.2007, leg. Frisch & Serri (MNHUB); 1 ex., S Kakan, Dasht-e Khoshk, 30°29'N, 51°51'E, 2400 m, 7.VII.2004, leg. Frisch & Serri (MNHUB). – **Kerman**: 2 exs., 3 km E pass Mahan-Sirch, 30°12'N, 57°26'E, 2430 m, 26.IV.2007, leg. Frisch & Serri (MNHUB).

Israel: 3 exs., Golan Heights, W Merom Golan, Bental reservoir, 33°08'N, 35°47'E, 940 m, 25.III.2008, leg. Assmann (TAU, cFel); 2 exs., same locality, but ca. 1000 m, 25.III.2008, leg. Wrase (cSch).

Comment

Aleochara haematoptera is apparently common on river banks in Iran. For additional records from northern Iran see Likovský (1981).

Aleochara (Xenochara) inconspicua Aubé, 1850

Material examined

Iran: **Azarbayjan-e Sharqi**: 3 exs., S Tabriz, Kandovan, 37°47'N, 46°15'E, 2250 m, 8.VIII.2005, leg. Frisch (MNHUB, cAss). – **Qazvin**: 1 ex., Ab Gam, 35°48'N, 49°23'E, 1500 m, 21.VI.2004, leg. Frisch (MNHUB). – **North Khorasan**: 1 ex., Shirvan–Quchan road, 24 km SSW Faruj, Garmab, 37°03'N, 58°07'E, 1710 m, 1.VI.2006, leg. Frisch & Serri (MNHUB). – **Lorestan**: 1 ex., NE Alashtar, Kahman, 33°57'N, 48°21'E, 2000 m, 25.VI.2004, leg. Frisch (MNHUB).

Comment

Likovský (1981) reported this species from one locality in the Elburz range in northern Iran.

Aleochara (Xenochara) sparsa Heer, 1839

Material examined

Iran: **Mazandaran**: 6 exs., Sari county, Mohammadabad, NE Sangdeh, 36°04'N, 53°10'E, 1530 m, beech forest, 29.–30.V.2008, leg. Pütz (cPüt, cAss).

Comment

The above specimens represent the first record of this widespread species from Iran.

Aleochara (Xenochara) falsa Likovský, 1981

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., Takab, 13 km E Takht-e-Soleyman, 36°36'N, 47°20'E, 2450 m, 8.IX.2008, leg. Frisch & Serri (MNHUB).

Comment

This species has become known only from Iran (Assing 2009a).

Aleochara (Xenochara) laevigata Gyllenhal, 1810

Material examined

Iran: **Azarbayjan-e Gharbi**: 1 ex., Takab, 13 km E Takht-e-Soleyman, 36°36'N, 47°20'E, 2450 m, 8.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex., N Takab, 3 km NE Takht-e-Soleyman, 36°38'N, 47°14'E, 2270 m, 8.IX.2008, leg. Frisch & Serri (MNHUB). – **Kordestan**: 2 exs., 27 km SW Saqqez, 2 km SW Mir Deh, 36°08'N, 46°02'E, 1600 m, 3.IX.2008, leg. Frisch & Serri (MNHUB, cAss); 2 exs., pass 21 km E Sanandaj, 35°20'N, 47°09'E, 2100 m, 5.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex., road Sanandaj–Divandarreh, 21 km S Divandarreh, 35°46'N, 47°05'E, 1890 m, 6.IX.2008, leg. Frisch & Serri (MNHUB); 1 ex., 5 km S Qorveh, Veihaj, 35°07'N, 47°46'E, 2060 m, 5.IX.2008, leg. Frisch & Serri (cAss).

Comment

This species was reported from several localities in northern and western Iran by Likovský (1981). However, owing to considerable taxonomic confusion in the *A. laevigata* species group, these records were doubtful (Assing 2009a). The presence of *A. laevigata* in Iran is now confirmed.

Aleochara (Xenochara) serrulata **n. sp.**
(Figs. 162–166)

Type material

Holotype ♂: "Iran, Prov. Mazandaran [IR08-10], Nur County, Elburz Mts., S-Slope, W Baladeh, 36°14'14.3"N, 51°26'76.5"E [recte: 36°14.143'N, 51°26.765'E), 3160 m, sifted, 01.VI.2008, leg. A. Pütz / Holotypus ♂ *Aleochara serrulata* sp. n. det. V. Assing 2009" (cAss).

Etymology

The specific epithet is an adjective derived from the Latin noun serrula (small saw) and refers to the shape of the posterior margin of the male tergite VIII.

Description

Habitus as in Fig. 162. Body length 5.3 mm.

Coloration: head, pronotum, and abdomen blackish; elytra reddish, with the anterior and lateral margins diffusely infuscate; legs and antennae dark brown.

Head with very sparse punctation and without microsculpture, glossy; eyes large, somewhat longer than postocular region in dorsal view (Fig. 163). Antenna relatively short, 1.1 mm long, and moderately incrassate apically; antennomere IV weakly transverse; X approximately 1.5 times as wide as long.

Pronotum 1.35 times as wide as long and 1.55 times as wide as head, widest in posterior half; punctation sparse, well-defined, and rather fine; interstices shiny and without microsculpture, on average approximately twice as wide as diameter of punctures (Fig. 163).

Elytra 0.73 times as long as pronotum; punctation somewhat coarser and denser than that of pronotum; interstices without microsculpture, glossy (Fig. 163). Legs slender; metatarsus 0.83 times as long as metatibia; metatarsomere I elongated, approximately as long as the combined length of II–IV.

Abdomen subparallel, narrower than elytra; punctation relatively coarse and well-defined; anterior impressions of tergites III–V very shallow and with rather coarse, moderately dense punctation; punctation of tergite III rather dense, that of tergites IV–VII of decreasing density, denser in anterior than in posterior portions of tergal surfaces, that of tergite VIII extremely sparse; all tergites without microsculpture and glossy (Fig. 164).

♂: posterior margin of tergite VIII in the middle distinctly concave, on either side of this excision with four setiferous dents (Fig. 165); posterior margin of sternite VIII strongly and convexly produced and with fringe of long dense marginal setae; median lobe of aedeagus shaped as in Fig. 166, internal sac with long flagellum and with apical sclerotised structures of distinctive shape.

♀: unknown.

Comparative notes

Based on the morphology of the aedeagus (long flagellum, shapes of the ventral process and the apical internal structures), as well as on external characters (absence of microsculpture, sparsely punctate head and pronotum, sparsely punctate posterior portions of tergites IV–VIII, long tarsi, elongated metatarsomere I), this species refers to the *A. laevigata* group (see ASSING 2009a). From all the species of this group, *A. serrulata* is distinguished by the extensively reddish coloration of the elytra, the modified posterior margin of the male tergite VIII, and the morphology of the aedeagus (shape in lateral view, shape of apical internal structures). For illustrations of the Palaearctic representatives of this group see ASSING (2009a).

Distribution and bionomics

The type locality is situated in the Elburz range in northern Iran. The holotype was collected by sifting leaf litter at an altitude of 3160 m.

4 References

ASSING, V. (1997): Review of the Palaearctic species of *Autalia* Leach in Samouelle, 1819 (Coleoptera, Staphylinidae, Aleocharinae). – Entomologische Blätter **93**: 69–85.

ASSING, V. (2001): Review of Palaearctic *Autalia* Leach in Samouelle, 1819. IV. New species and additional records (Coleoptera, Staphylinidae, Aleocharinae). – Revue suisse de Zoologie **108**: 911–917.

ASSING, V. (2002): A new species of *Euryusa* Erichson from Turkey, with notes on *Silusa areolata* Reitter (Insecta: Coleoptera: Staphylinidae: Aleocharinae). – Reichenbachia **34**: 271–276.

ASSING, V. (2003a): A new genus of Oxypodini (Coleoptera, Staphylinidae, Aleocharinae) from the Palaearctic region. – Bulletin of the National Science Museum, Tokyo, Series A **29**: 165–176.

ASSING, V. (2003b): On the taxonomy of *Gyrohypnus* Leach: new synonymies, new species, and a key to the Western Palaearctic and Middle Asian representatives of the genus (Insecta: Coleoptera: Staphylinidae). – Entomologische Blätter **99**: 55–81.

ASSING, V. (2004): New species and records of Staphylinidae from Turkey III (Insecta: Coleoptera). – Linzer biologische Beiträge **36**: 669–733.

ASSING, V. (2005a): Two new species and new records of Staphylinidae from the Greek island Lesbos (Insecta: Coleoptera). – Linzer biologische Beiträge **37**: 1035–1046.

ASSING, V. (2005b): A revision of the Middle Asian species of *Drusilla* Leach (Insecta: Coleoptera: Staphylinidae: Aleocharinae). – Entomologische Blätter **101**: 43–56.

ASSING, V. (2005c): On the Western Palaearctic species of *Drusilla* Leach, with special reference to the species of the Eastern Mediterranean (Coleoptera: Staphylinidae, Aleocharinae). – Koleopterologische Rundschau **75**: 111–149.

ASSING, V. (2005d): A revision of the species of *Geostiba* Thomson and *Tropimenelytron* Pace of the Eastern Mediterranean, the Caucasus, and adjacent regions (Coleoptera: Staphylinidae, Aleocharinae). – Linzer biologische Beiträge **37**: 903–1006.

ASSING, V. (2006a): On some species of *Oxypoda* Mannerheim from Turkey and adjacent regions (Insecta: Coleoptera: Staphylinidae, Aleocharinae). – Linzer biologische Beiträge **38**: 277–331.

ASSING, V. (2006b): New species and records of Staphylinidae from Turkey IV, with six new synonymies (Coleoptera: Staphylinidae). – Koleopterologische Rundschau **76**: 223–276.

ASSING, V. (2007a): New species and additional records of Paederinae and Aleocharinae from Iran (Coleoptera, Staphylinidae). – Deutsche entomologische Zeitschrift **54**: 179–193.

ASSING, V. (2007b): On the Xantholinini of Turkey and adjacent regions (Coleoptera: Staphylinidae: Staphylininae). – Zootaxa **1474**: 1–54.

ASSING, V. (2007c): A revision of the species of *Pronomaea* Erichson of the Western Palaearctic region, including Middle Asia (Coleoptera: Staphylinidae: Aleocharinae: Pronomaeini). – Beiträge zur Entomologie, Keltern **57**: 367–396.

ASSING, V. (2007d): A revision of Palaearctic *Lobrathium* Mulsant & Rey. III. New species, new synonyms, and additional records (Coleoptera: Staphylinidae, Paederinae). – Linzer biologische Beiträge **39**: 731–755.

ASSING, V. (2007e): On the genus *Pseudobium* Mulsant & Rey II. A new species from Pakistan and additional records (Insecta: Coleoptera: Staphylinidae: Paederinae). – Linzer biologische Beiträge **39**: 15–21.

ASSING, V. (2007f): New species and additional records of Staphylinidae from Turkey V (Coleoptera). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **700**: 64 pp.

ASSING, V. (2008a): A revision of the Western Palaearctic and Middle Asian species of *Drusilla* Leach. IV. A new species from Iran and additional records (Coleoptera: Staphylinidae, Aleocharinae, Lomechusini). – Entomologische Blätter **103/104**: 51–58.

ASSING, V. (2008b): A revision of the *Micrillus* species of the Palaearctic region, with notes on two species from adjacent parts of the Afrotropical and Oriental regions (Coleoptera: Staphylinidae: Paederinae). – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **1**: 301–344.

ASSING, V. (2009a): On the taxonomy and zoogeography of some Palaearctic *Aleochara* species of the subgenera *Xenochara* Mulsant & Rey and *Rheochara* Mulsant & Rey (Coleoptera: Staphylinidae: Aleocharinae). – Beiträge zur Entomologie, Keltern **59**: 33–101.

Assing, V. (2009b): On some *Oxypoda* species of the subgenus *Sphenoma* Mannerheim (Coleoptera: Staphylinidae: Aleocharinae). – Linzer biologische Beiträge **41**: 1307–1315.

Assing, V. (2009c): New species, new synonymies, and additional records of *Leptusa* from Turkey and Iran (Coleoptera: Staphylinidae: Aleocharinae). – Linzer biologische Beiträge **41**: 1285–1305.

Assing, V. (2009d): A revision of *Geostiba* of the Western Palaearctic region. XIX. New species from Turkey and Iran and additional records, with an updated key and catalogue of the species of the Eastern Mediterranean, the Caucasus, and adjacent regions (Coleoptera: Staphylinidae: Aleocharinae). – Linzer biologische Beiträge **41**: 1191–1246.

Assing, V. (2009e): A revision of Western Palaearctic *Medon*. VII. A new species from southern Turkey and additional records (Coleoptera: Staphylinidae: Paederinae). – Linzer biologische Beiträge **41**: 1253–1268.

Assing, V. (2009f): On the *Pseudomedon* species of the Palaearctic region (Coleoptera: Staphylinidae: Paederinae). – Linzer biologische Beiträge **41**: 1175–1189.

Assing, V. (2009g): A revision of *Leptobium* Casey. IV. Three new species and additional records (Coleoptera: Staphylinidae: Paederinae). – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **2**: 227–236.

Assing, V. (2009h): On the Staphylinidae of Turkey. VI. Thirteen new species and additional records (Coleoptera). – Koleopterologische Rundschau **79**: 117–172.

Assing, V. (2009i): On the Western Palaearctic and Middle Asian species of *Ochthephilum* Stephens, with notes on *Cryptobium koltzei* Eppelsheim (Coleoptera: Staphylinidae: Paederinae: Cryptobiina). – Linzer biologische Beiträge **41**: 397–426.

Assing, V. (2009j): On the taxonomy, bionomics, and distribution of *Platyola balcanica*, a species with a remarkable ophthalmopolymorphism (Coleoptera: Staphylinidae: Aleocharinae). – Linzer biologische Beiträge **41**: 445–451.

Assing, V. (2010): A revision of Palaearctic *Medon*. VIII. A new species from Nepal and additional records (Coleoptera: Staphylinidae: Paederinae). – Linzer biologische Beiträge **42**: 489–498.

Assing, V. & Schülke, M. (2002): New species and records of *Lobrathium* Mulsant & Rey from Turkey, Albania, and Tajikistan (Coleoptera: Staphylinidae, Paederinae). – Linzer biologische Beiträge **34**: 277–287.

Assing, V. & Wunderle, P. (2008): On the *Alevonota* species of the Western Palaearctic region (Coleoptera: Staphylinidae: Aleocharinae: Athetini). – Beiträge zur Entomologie, Keltern **58**: 145–189.

Bernhauer, M. (1902): Die Staphyliniden der paläarktischen Fauna. I. Tribus: Aleocharini. (II. Theil). – Verhandlungen der kaiserlich-königlichen zoologisch-botanischen Gesellschaft in Wien **52** (Beiheft): 87–284.

Boháč, J. (1981): Results of the Czechoslovak-Iranian entomological expeditions to Iran. Coleoptera: Staphylinidae. Three new species of staphylinids from Iran. – Acta entomologica Musei nationalis Pragae **40**: 355–358.

Coiffait, H. (1970): Tableau des *Stilicus* de la région paléarctique occidentale avec description d'une espèce nouvelle (Coléoptères Staphylinidae). – Bulletin de la Société d'Histoire naturelle de Toulouse **106**: 146–155.

Coiffait, H. (1981): Sur quelques staphylinides nouveaux ou mal connus. – Nouvelle Revue d'Entomologie **11**: 51–57.

Coiffait, H. (1984): Coléoptères Staphylinidae de la région paléarctique occidentale. V. Sous famille Paederinae Tribu Paederini 2, Sous famille Euaesthetinae. – Nouvelle Revue d'Entomologie, Supplément **13** (4): 1–424.

De Marzo, L. (2007): Aspetti morfologici della spermateca in *Diestota guadalupensis* Pace e altre Aleocharinae (Coleoptera Staphylinidae). – Entomologica, Bari **40** (2006–2007): 57–73.

Fauvel, A. (1871): Faune Gallo-Rhénane ou descriptions des insectes qui habitent la France, la Belgique, la Hollande, le Luxembourg, les provinces Rhénanes et la Valais avec tableaux synoptiques et planches gravées. – Bulletin de la Société Linnéenne de Normandie (2) **5** (1869–1870): 27–192.

Fauvel, A. (1900): Staphylinides paléarctiques nouveaux. – Revue d'Entomologie **19**: 218–253.

Ghahari, H., Anlaş, S., Sakenin, H., Ostovan, H. & Havaskary, M. (2009a): Biodiversity of rove beetles (Coleoptera: Staphylinoidea: Staphylinidae) from the Arasbaran biosphere reserve and vicinity, northwestern Iran. – Linzer biologische Beiträge **41**: 1949–1958.

Ghahari, H., Anlaş, S., Sakenin, H., Ostovan, H. & Tabary, M. (2009b): A contribution to the rove beetles (Coleoptera: Staphylinoidea: Staphylinidae) of Iranian rice fields and surrounding grasslands. – Linzer biologische Beiträge **41**: 1959–1968.

Grebennikov, V. V. & Newton, A. F. (2009): Good-bye Scydmaenidae, or why the ant-like stone beetles should become megadiverse Staphylinidae sensu latissimo (Coleoptera). – European Journal of Entomology **106**: 275–301.

Gusarov, V. I. (1991): Novyi i maloizvestnye Palearkticheskie stafilinidy roda *Rugilus* Leach (Coleoptera, Staphylinidae). – Entomologicheskoe Obozrenie **70**: 419–425.

Herman, L. H. (2001): Catalog of the Staphylinidae (Insecta: Coleoptera). 1758 to the end of the second millennium. Volumes I–VII. – Bulletin of the American Museum of Natural History **265**: 4218 pp.

Jarrige, J. (1971): Contribution à la faune de l'Iran. 21. Coléoptères Brachelytra. – Annales de la Société entomologique de France (Nouvelle Série) **7**: 483–502.

Kapp, A. (2005): Die paläarktischen Arten der Gattungen *Taxicera* Mulsant & Rey 1873 und *Discerota* Mulsant & Rey 1873 (Staphylinidae, Aleocharinae, Subtribus Taxicerina). – Linzer biologische Beiträge **37**: 1277–1323.

Klimaszewski, J., Pelletier, G. & Germain, C. (2006): Review of *Oxypoda* species in Canada and Alaska (Coleoptera, Staphylinidae, Aleocharinae): systematics, bionomics, and distribution. – Canadian Entomologist **138**: 737–852.

Likovský, Z. (1981): Ergebnisse der tschechoslovakisch-iranischen entomologischen Expeditionen nach dem Iran. Coleoptera: Staphylinidae, Subtribus Aleocharae. – Acta entomologica Musei nationalis Pragae **40**: 359–370.

Reitter, E. (1885): Neue Coleopteren aus Europa und den angrenzenden Ländern, mit Bemerkungen über bekannte Arten. Theil 1. – Deutsche entomologische Zeitschrift **29**: 353–392.

Rougemont, G. M. de (1988): Notes on some palearctic *Stilicus* species with special reference to Turkey (Col. Staphylinidae, Paederinae). – Revue suisse de Zoologie **95**: 513–520.

Sakenin, H., Eslami, B., Samin, N., Imani, S., Shirdel, F. & Havaskary, M. (2008a): A contribution to the most important trees and shrubs as the hosts of wood-boring beetles in different regions of Iran and identification of many natural enemies. – Journal of Plant and Ecosystem **16**: 27–46.

Sakenin, H., Ghahari, H., Tabari, M., Monem, R., Havaskary, M. & Rashidi, A. (2008b): A preliminary survey on the fauna of ants (Hymenoptera: Formicidae, Mutillidae) and rove beetles (Coleoptera: Staphylinidae) in Iranian rice fields and

surrounding grasslands. – Proceedings of the national Conference of agronomical Rice Breeding, Young Research Club Islamic Azad University of Ghaemshahr, 26–27 November, Abstract p. 80 [full paper on CD Rom, 10 pp.; in Persian with English summary].

SAKENIN, H., IMANI, S., SHIRDEL, F., SAMIN, N. & HAVASKARY, M. (2008c): Identification of Pentatomidae (Heteroptera) and their host plants in central and eastern Mazandaran province and introducing of many dominant natural enemies. – Journal of Plant and Ecosystem **15**: 37–51.

SAKENIN, H., RAHEB, J., IMANI, S., HAVASKARY, M., SHIRDEL, F. & MOHSENI, H. (2008d): A preliminary survey on dipteran predators and parasitoids and Odonata in Iranian rice fields. – Proceedings of the national Conference of agronomical Rice Breeding, Young Research Club Islamic Azad University of Ghaemshahr, 26–27 November, Abstract p. 80 [full paper on CD Rom, 10 pp.; in Persian with English summary].

SCHEERPELTZ, O. (1963): Contribution à l'étude de la faune d'Afghanistan 80. Coleoptera, Staphylinidae. 116. Beitrag zur Kenntnis der paläarktischen Staphyliniden. – Lunds Universitets Årsskrift (Ny Följd, Afdelningen 2) **58** (11): 1–38.

SMETANA, A. (2004): Staphylinidae, subfamilies Omaliinae–Dasycerinae, Phloecharinae–Apaticinae, Piestinae–Staphylininae. – In: LÖBL, I. & SMETANA, A. (eds.): Catalogue of Palaearctic Coleoptera. II. Hydrophiloidea – Histeroidea – Staphylinoidea, pp. 237–272, 329–495, 505–698; Stenstrup (Apollo Books).

STRAND, A. (1939): Neue paläarktische Arten der Gattung *Gyrophaena* Mannh. (Col., Staph.). – Norsk entomologisk Tidsskrift **5** (1935–1940): 108–111.

TRONQUET, M. (2009): Révision des *Aleochara* (*Heterochara*) d'Europe, du bassin méditerranéen et des îles Atlantiques (Coleoptera: Staphylinidae, Aleocharinae, Aleocharini). – Revue de l'Association roussillonnaise d'Entomologie **18**: 93–125.

ZANETTI, A. (1977): Un nuovo *Stilicus* (Coleoptera, Staphylinidae) dell'Italia centromeridionale. – Bollettino del Museo Civico di Storia Naturale di Verona **4**: 650–653.

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Gonodera gilanica n. sp. (Coleoptera: Tenebrionidae: Alleculinae: Gonoderini) from Iran

Vladimír Novák

Abstract

Gonodera gilanica **n. sp.** is described from Iran and compared with the similar species *G. macrophthalma* Reitter, 1884 and *G. rufoaenea* Reitter, 1900. *G. jureceki* Mařan, 1944 is a **new synonym** of *G. rufoaenea*. All species treated are keyed and illustrated.

Keywords: Taxonomy, new species, new synonymy, key, Alleculinae, *Gonodera*, Palaearctic region.

Zusammenfassung

Gonodera gilanica **n. sp.** aus dem Iran wird beschrieben und mit den ähnlichen Arten *G. macrophthalma* Reitter, 1884 und *G. rufoaenea* Reitter, 1900 verglichen. *G. jureceki* Mařan, 1944 ist ein **neues Synonym** von *G. rufoaenea*. Alle behandelten Arten werden abgebildet und in einem Bestimmungsschlüssel dargestellt.

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1 Introduction

Mulsant (1856) described the genus *Gonodera* Mulsant, 1856 of the subtribe Gonoderina Seidlitz, 1896. Borchmann (1910) knew 10 species of this genus, Mader (1928) 10 and Novák & Pettersson (2008) 12. Seidlitz (1896) and Mařan (1944) separated the species of *Gonodera* s. str. (i. e. with antennomere 3 almost as long as antennomere 4) into a species group with elytral interspaces convex and into a group with elytral interspaces flat; into this latter group fall *Gonodera jureceki* Mařan, 1944 from Turkey, *G. macrophthalma* Reitter, 1884 from Armenia, Russia (southern territory), Turkey (Asian territory) and "Caucasus", and *G. rufoaenea* Reitter, 1900 from Syria and Turkey. An additional species from Iran, evidently also belonging to this group, is described in the present paper as *G. gilanica* n. sp. and compared with its congeners.

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2 Material and methods

Two important morphometric characteristics are applied: the 'ocular index' (Campbell & Marshall 1964), i. e. minimum distance between the eyes divided by maximum dorsal width across the eyes, the resulting quotient multiplied by 100, and the 'pronotal index' (Campbell 1965), i. e. ratio of the pronotal length along the midline to the pronotal width at the posterior angles, this value multiplied by 100 for convenience.

Labels of type material are cited in their original spelling and language, except for the following adaptations according to the general format requirements of the journal: names of persons (except authors of species) in small capitals, scientific names of genera and species in italics. A slash (/) separates lines from the labels, and a double slash (//) separates different labels.

Acronyms of depositories

HNHM	Hungarian Natural History Museum, Budapest, Hungary
NMPC	National Museum of Prague, Czech Republic
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany
VNPC	private collection Vladimír Novák, Praha, Czech Republic

3 Taxonomy

3.1 *Gonodera gilanica* n. sp.
(Figs. 1, 2, 8, 12)

Type locality: Iran, Gílán.

Holotype (♂): 'Iran bor. 1.6.2001' / 'Gilan mer.or' / 'Rudbar env.' / 'lgt. Orzsulik' (VNPC).

Paratypes: 1 ♀: 'Iran, C Gílán, 36.51N/49.36E,' / 'Darre Dasht,' / '(20 km E Rúdbár),' / '4.v.2000, J. Kaláb leg.' (VNPC). – 1 ♀: 'Iran – Gilan m. 150' / '9 km S Asalem' / '18/22.V.2002, leg. G. Sama' (SMNS).

All types have printed red labels '*Gonodera gilanica* sp. nov. Holotypus [respectively Paratypus] V. Novák det. 2008'.

Etymology

The new species is named after the type locality, district Gílán, in Iran.

Description

Male holotype:

Habitus see Fig. 1. Body from pale brown to dark brown, length 11.32 mm, widest near two-thirds of elytral length, maximum width 3.93 mm, 2.88 times as long as wide.

Head (Fig. 8) large, relatively broad, posterior half dark brown, anterior half and clypeus pale brown with short pale brown setation, setation of clypeus longer. Head widest across eyes (1.79 mm), approximately 0.73 times as wide as pronotal base. Length of head (visible part) 1.69 mm. Eyes large, transverse, dark, slightly excised. Space between eyes shorter than diameter of eye, ocular index 27.21. Punctation of posterior half dense and coarse, punctures large and relatively deep. Punctation of anterior half sparse, punctures smaller.

Antenna relatively long (7.48 mm, i. e. reaching 0.66 of body length), unicoloured pale brown with short pale brown setation, dense punctation and microgranulation. Antennomeres dull, antennomeres 3–10 slightly serrate, conspicuously widened at apex, antennomere 2 shortest, antennomeres 4–11 longer than antennomere 3. Ratios of lengths of antennomeres 1–11 equal to 0.76 : 0.36 : 1.00 : 1.75 : 1.66 : 1.82 : 1.95 : 2.07 : 2.02 : 1.95 : 1.98. Length/maximum width ratios of antennomeres 1–11 equal to 1.40 : 1.25 : 2.39 : 3.00 : 2.76 : 3.13 : 3.34 : 3.80 : 3.96 : 4.11 : 6.05.

Maxillary palpus unicoloured pale brown, concolorous with tarsi and antenna, with short pale brown setation, shiny. Palpomeres 2–4 distinctly widened at apex, penultimate palpomere shorter than palpomere 2 and ultimate palpomere. Ultimate palpomere elongate triangular, axe-shaped, apex distinctly rounded near outer border. Ratios of lengths of palpomeres 2–4 equal to 1.68 : 1.00 : 0.93. Length/maximum width ratios of palpomeres 2–4 equal to 3.97 : 2.00 : 2.32.

Pronotum (Fig. 8) six-angled, brown, glabrous, distinctly narrower than elytra; at base 1.36 times as wide as head across eyes, longest in the middle (1.51 mm) and widest near the middle, width at base 2.44 mm. Pronotal index 62.07. Borders complete, conspicuous through their entire length, except the middle of the base which is inconspicuous. Posterior margin very finely bisinuate and slightly rounded, posterior and anterior angles rounded and obtuse-angled, lateral margins with distinct angle and impression on both sides near the middle, finely excised and with additional impression near posterior angles on both sides, anterior margin nearly straight. Surface with microgranulation and relatively dense punctation, punctures small, interspaces broader than diameter of punctures.

Elytra unicoloured brown, glabrous, 8.12 mm long and 3.93 mm wide, distinctly broader than pronotum, widest approximately at two-thirds from base. Ratio elytral length/maximum width 2.07. Surface punctate, elytral striae distinct, punctures in striae medium-sized, separated by less than one puncture diameter. Elytral intervals with relatively dense punctation and microgranulation, punctures small-sized, slightly shiny. Elytral epipleura well developed, glabrous, pale brown, evenly narrowing in basal half, parallel in apical half anterior to abdominal sternite 5, then narrowing to rounded apex.

Scutellum large, glabrous, triangular, brown with dark margins, paler than pronotum.

Legs pale brown with dense, short, pale brown setation, tarsi with distinctly longer pale brown setation. Femora thicker than tibia. Tibia very narrow in posterior half, slightly widening anteriorly in anterior half. Penultimate tarsomeres without membranous lobes. Ratios of lengths of tarsomeres 1–5 and 1–4 equal to 1.00 : 0.64 : 0.59 : 0.49 : 1.23 (protarsus), 1.00 : 0.46 : 0.42 : 0.30 : 0.92 (mesotarsus), and 1.00 : 0.47 : 0.30 : 0.69 (metatarsus). Both anterior tarsal claws with 7 visible teeth.

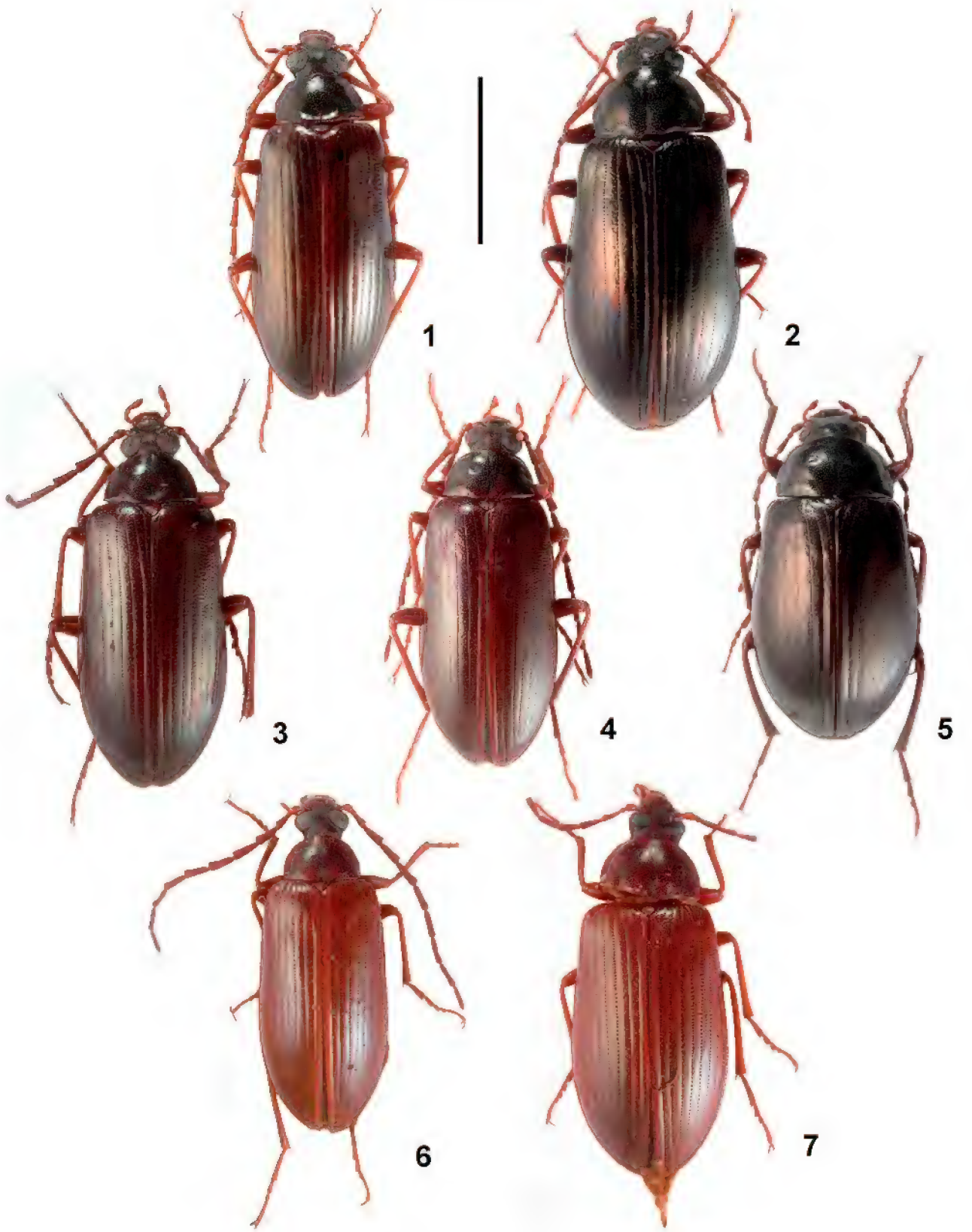
Ventral side of body and abdomen brown, slightly paler than upper part of body, with punctation. Abdomen with sparse, short setation, sides of abdominal sternites with microgranulation and rugosities, more matt. Ultimate abdominal sternite laterally with shallow impression on both sides.

Aedeagus see Fig. 12. Pale yellowish brown, slightly shiny, apical piece evenly elongate triangular dorsally, relatively narrow and evenly narrowing laterally.

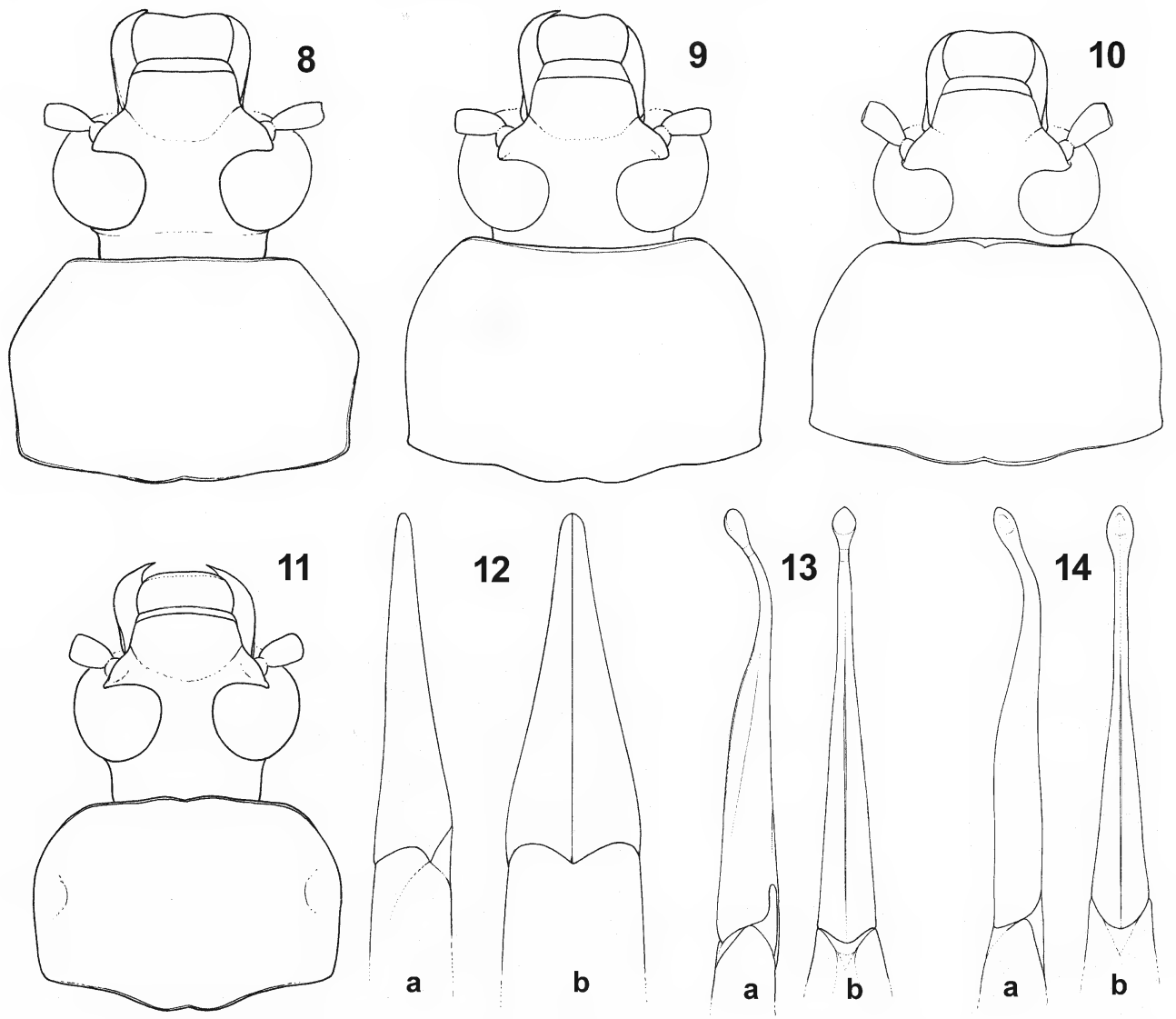
Female paratypes (Fig. 2):

Ratios of lengths of antennomeres 1–11 equal to 0.43 : 0.19 : 1.00 : 0.83 : 0.96 : 0.86 : 0.89 : 0.94 : 0.86 : 0.86 : 0.91. Length/maximum width ratios of antennomeres 1–11 equal to 1.34 : 0.85 : 3.75 : 2.53 : 3.07 : 3.21 : 3.20 : 2.74 : 2.79 : 2.77 : 3.57.

Ratios of lengths of tarsomeres 1–5 and 1–4 equal to 1.00 : 0.55 : 0.51 : 0.33 : 1.22 (protarsus), 1.00 : 0.49 : 0.42 : 0.25 : 0.88 (mesotarsus), and 1.00 : 0.39 : 0.25 : 0.73 (metatarsus). Both anterior tarsal claws with 5 visible teeth.



Figs. 1–7. *Gonodera* spp., habitus. – **1**, **2**. *G. gilanica* n. sp., ♂ holotype (1), ♀ (2). **3**. *G. jureceki*, ♂ holotype. **4**, **5**. *G. macrophthalma*, ♂ (4), ♀ (5). **6**, **7**. *G. rufoaenea*, ♂ holotype (6), ♀ allotype (7). – Scale: 5 mm.



Figs. 8–14. *Gonodera* spp., head and pronotum (8–11), aedeagus (12–14) in lateral (a) and dorsal (b) view. – **8**, **12**. *G. gilanica* n. sp., ♂ holotype. **9**, **13**. *G. jureceki*, ♂ holotype. **10**, **14**. *G. macrophthalma*. **11**. *G. rufoaenea*.

Other measurements and ratios (mean value, n = 2; full range in parentheses): Body length 13.02 (12.79–13.24) mm; head length 1.84 (1.81–1.86) mm; head width 2.03 (1.98–2.07) mm. Ocular index 49.44 (45.85–53.03). Pronotal length (along midline) 2.14 (2.08–2.19) mm; pronotal width at base 3.19 (3.06–3.31) mm. Pronotal index 66.94 (66.11–67.76). Elytral length 9.05 (8.85–9.25) mm; elytral width 5.28 (5.18–5.37) mm.

Differential diagnosis

Gonodera gilanica n. sp. differs from the similar species *G. macrophthalma* Reitter, 1884 and *G. rufoaenea* Reitter, 1900 mainly by the pronotum, which is six-angled, has the lateral margins with a distinct angle and is broadest at about half of its length, while *G. macrophthalma* and *G. rufoaenea* have the lateral margins of the pronotum without a distinct angle and the maximum pronotal width near base. For further details see the key below (chapter 4).

Distribution: Iran.

3.2 Similar species

Gonodera jureceki Mařan, 1944
(Figs. 3, 9, 13)

Gonodera jureceki Mařan, 1944: 193.

Type locality: Turkey (Asia minor, Brussa).

Type material examined: Holotype, by monotypy (♂): [white label] 'Brussa V. / Asia min. / Dr. JUREČEK 31.' [printed in black] // [red label with black frame] 'Typus' // [white label] '*Gonodera* / *jurečeki* m. [black handwritten] / Dr. MAŘAN det.' [printed in black] (NMPC).

Remarks: Ocular index 32.03; pronotal index 59.11. Ratio of length apical piece/basal piece of aedeagus 1 : 1.53. Ratios of lengths of antennomeres 1–11 equal to 0.74 : 0.36 : 1.00 : 1.34 : 1.41 : 1.57 : 1.64 : 1.83 : 1.65 : 1.72 : 1.85. – The figures of habitus (Fig. 3), head and pronotum (Fig. 9), lateral and dorsal views of the aedeagus (Fig. 13), and the given indexes and parameters clearly indicate that *Gonodera jureceki* Mařan, 1944 is a new junior synonym of *G. macrophthalma* Reitter, 1884.

Distribution: Turkey.

Gonodera macrophthalma Reitter, 1884 (Figs. 4, 5, 10, 14)

Gonodera macrophthalma REITTER, 1884: 89.
Gonodera latior PIC, 1903: 163, syn.
Gonodera jureceki MAŘAN, 1944: 193, **n. syn.**

Type locality: 'Kaukas'.

Type material examined: Holotype (♂): [white label] 'Kaukas' / 'LEDER' [printed in black] // [white label with red frame] 'Holotypus' [printed in red] '1884 ♂' [black handwritten] / '*Gonodera*' / '*macrophthalma*' / 'Reitter' [black handwritten] // white label '*G. macroph*' / '*thalma*' / 'm.' [black handwritten] // [white label] 'Coll. REITTER' [printed in black] (HNHM).

Other material examined (all VNPC): 1 ♂, Russia, Caucasus, Krasnaja Poljana, 14.VI.1974, JAN VIŠA leg. – 2 ♂♂, Turkey, NW Anatolia, Kızılcahaman env., 1500 m, 30.V.1992, S. KADLEC leg. – 1 ♂, NW Turkey, N Yaralıgöz, Geçidi [= pass] near Kastamonu, N41°46' E34°04', 1333 m, 22.VI.2006, P. KABÁTEK leg. – 1 ♂, Turkey, prov. Zonguldak, Safranbolu, 1000 m, 4.–5. VI.1996, P. ZAHRADNÍK leg. – 3 ♂♂, Turkey, prov. Bolu, Abant gölü [= Lake Abant], 1200 m, 4.VI.1996, P. ZAHRADNÍK leg. – 1 ♂, NW Turkey, prov. Bolu, lake Abant env., 19.IV.–12.V.1995, F. MORAVEC & J. HRON leg. – 1 ♂, N Turkey, Drazon, 6.VI.1991, SKOUPÝ leg.

Remarks: Habitus of male holotype see Fig. 4, habitus of female see Fig. 5, head and pronotum see Fig. 10. Ocular index 30.61; pronotal index 58.77. Aedeagus see Fig. 14; ratio of length apical piece/basal piece 1 : 1.60. Ratios of lengths of antennomeres 1–11 equal to 0.70 : 0.34 : 1.00 : 1.27 : 1.44 : 1.52 : 1.60 : 1.72 : 1.65 : 1.66 : 1.89.

Distribution: Armenia, Russia (southern territory), northern Turkey.

Gonodera rufoaenea Reitter, 1900 (Figs. 6, 7, 11)

Gonodera rufoaenea REITTER, 1900: 159.

Type locality: Asia minor, Bulghar Maaden.

Type material examined: Holotype (♂): [white label with red frame] 'Asia minor' / 'Bulghar Maaden' / 'v. BODEMEYER' [printed in black] // [white label with red frame] 'Holotypus' [printed in red] '1900 ♂' [black handwritten] / '*Gonodera*' / '*rufo-aenea*' / 'Reitter' [black handwritten] // [white label] '*Gonodera*' / '*rufo-aenea*' / 'm.' [black handwritten] // [white label] 'Coll. REITTER' [printed in black] (HNHM). – Allotype (♀): [white label with red frame] 'Asia minor' / 'Bulghar Maaden' / 'v. BODEMEYER' [printed in black] // [white label with red frame] 'Allotypus' [printed in red] '1900 ♀' [black handwritten] / '*Gonodera*' / '*rufo-aenea*' / 'Reitter' [black handwritten] // white label 'Coll. REITTER' [printed in black] (HNHM).

Remarks: Habitus of male holotype and female allotype see Figs. 6, 7, head and pronotum see Fig. 11. Ocular index 30.61; pronotal index 58.77.

Distribution: Syria, Turkey.

4 Key to the species treated

1 Antennomere 3 distinctly shorter than antennomere 4 or elytral intervals distinctly vaulted and space between eyes as wide as clypeus. ..... Other *Gonodera* species
– Antennomere 3 almost as long as antennomere 4, elytral intervals flat and space between eyes distinctly narrower than width of clypeus. **2**
2 Pronotum broadest near the middle, six-angled, lateral margins with distinct angle (Fig. 8). Aedeagus see Fig. 12. – Iran. ..... ***Gonodera gilanica* n. sp.**
– Pronotum broadest near basal angles, lateral margins straight or rounded (Figs. 9–11). **3**
3 Upper part of body pale reddish-brown with metallic shine; elytral intervals very finely and sparsely punctate. Pronotum see Fig. 11. [Aedeagus not studied]. – Syria, Turkey. ..... ***Gonodera rufoaenea***
– Upper part of body dark metallic; elytral intervals strongly and densely punctate. Pronotum see Figs. 9, 10. Aedeagus see Figs. 13, 14. – Caucasus, Armenia, Russia (Southern territory), Turkey. ..... ***Gonodera macrophthalma*** [= *Gonodera jureceki* n. syn.]

5 References

BORCHMANN, F. (1910): Pars 3, Alleculidae. – In: JUNK, W. & SCHENKLING, S. (eds.): Coleopterorum Catalogus, 80 pp.; Berlin (W. Junk).

CAMPBELL, J. M. (1965): A revision of the genus *Charisius* (Coleoptera: Alleculidae). – Coleopterist's Bulletin **19**: 41–56.

CAMPBELL, J. M. & MARSHALL, J. D. (1964): The ocular index and its applications to the taxonomy of the Alleculidae (Coleoptera). – Coleopterist's Bulletin **18**: 42.

MADER, L. (1928): Alleculidae. – In: WINKLER, A (ed.) (1924–1932): Catalogus coleopterorum regionis palaearcticae, columns 901–913; Vienna (Winkler & Wagner).

MAŘAN, J. (1944): Generis *Gonodera* Muls. revisio. Coleoptera Alleculidae. – Sborník entomologického oddělení Národního Musea v Praze **21–22**: 184–196.

MULSANT, M. E. (1856): Histoire naturelle des Coléoptères de France. Pectinipèdes, 96 pp.; Paris (L. Maison).

NOVÁK, V. & PETTERSSON, R. (2008): Alleculinae. – In: LÖBL, I. & SMETANA, A. (eds.): Catalogue of Palaearctic Coleoptera, Vol. 5. Tenebrionoidea, pp. 319–339; Stenstrup (Apollo Books).

PIC, M. (1903): Espèces et variétés nouvelles de Coléoptères. – L'Échange, Revue Linnéenne **19**: 161–163.

REITTER, E. (1884): [new taxa]. – In: BRENSKE, E. & REITTER, E.: Neuer Beitrag zur Käferfauna Griechenlands. Unter Mitwirkung der Herren Dr. EPPELSHEIM und L. GANGLBAUER. – Deutsche entomologische Zeitschrift **28**: 17–100, 2 pls.

REITTER, E. (1900): [new taxa]. – In: BODEMEYER, E. VON: Quer durch Klein-Asien in den Bulghar-Dagh. Eine naturwissenschftliche Studien-Reise, V + 169 pp.; Emmendingen (Druck- und Verlags-Aktien-Gesellschaft).

SEIDLITZ, G. C. M. VON (1896): Alleculidae. – In: ERICHSON, W. F. et al. (eds.): Naturgeschichte der Insecten Deutschlands, I. Abt., Band 5, 2. Hälfte, pp. 1–305; Berlin (Koehler).

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Revision of the genus *Amarygmus* Dalman and related genera. LVIII. The Amarygmini of Borneo (Coleoptera: Tenebrionidae), part II

Hans J. Bremer

Abstract

This is the second part of the revision of Amarygmini of Borneo. It contains descriptions and illustrations of 32 newly described species and subspecies of *Amarygmus* Dalman, 1823: *A. acerbus* **n. sp.** (Kalimantan), *A. adelphus* **n. sp.** (Kalimantan), *A. venustus admixtus* **n. ssp.** (Sabah), *A. agnatus* **n. sp.** (Sabah), *A. amoenus* **n. sp.** (Sabah), *A. astutus* **n. sp.** (Sarawak), *A. botryitidis* **n. sp.** (Sabah), *A. coruscus* **n. sp.** (Sabah), *A. danumensis* **n. sp.** (Sabah, Sarawak), *A. dispensatus* **n. sp.** (Sabah), *A. distinguens* **n. sp.** (Sarawak), *A. filiastra* **n. sp.** (Sarawak), *A. floreni* **n. sp.** (Sabah), *A. gilvicornis* **n. sp.** (Sabah), *A. gnomus* **n. sp.** (Sabah), *A. hongi* **n. sp.** (Sabah), *A. inermis* **n. sp.** (Sabah), *A. infans* **n. sp.** (Sabah), *A. intermedius* **n. sp.** (Sarawak, Peninsular Malaysia), *A. invenustus* **n. sp.** (Sabah), *A. lautus* **n. sp.** (Sarawak, Sumatra), *A. makiharai* **n. sp.** (Kalimantan), *A. miser* **n. sp.** (Sarawak, Peninsular Malaysia), *A. morpheus* **n. sp.** (Sabah), *A. neglectus* **n. sp.** (Sabah), *A. nepenthes* **n. sp.** (Sabah), *A. pallidior* **n. sp.** (Sabah), *A. pullus* **n. sp.** (Sabah), *A. seductus* **n. sp.** (Sarawak), *A. semotus* **n. sp.** (Sabah), *A. seponens* **n. sp.** (Kalimantan), *A. zynthiae* **n. sp.** (Sabah). The aedeagus of *A. verecundus* Bremer, 2010 is figured.

Key words: Coleoptera, Tenebrionidae, Amarygmini, *Amarygmus*, new species, Borneo.

Zusammenfassung

Dies ist der zweite Teil einer Revision der Amarygmini von Borneo. Es werden die folgenden 32 neuen Arten und Unterarten der Gattung *Amarygmus* Dalman, 1823 beschrieben: *A. acerbus* **n. sp.** (Kalimantan), *A. adelphus* **n. sp.** (Kalimantan), *A. venustus admixtus* **n. ssp.** (Sabah), *A. agnatus* **n. sp.** (Sabah), *A. amoenus* **n. sp.** (Sabah), *A. astutus* **n. sp.** (Sarawak), *A. botryitidis* **n. sp.** (Sabah), *A. coruscus* **n. sp.** (Sabah), *A. danumensis* **n. sp.** (Sabah, Sarawak), *A. dispensatus* **n. sp.** (Sabah), *A. distinguens* **n. sp.** (Sarawak), *A. filiastra* **n. sp.** (Sarawak), *A. floreni* **n. sp.** (Sabah), *A. gilvicornis* **n. sp.** (Sabah), *A. gnomus* **n. sp.** (Sabah), *A. hongi* **n. sp.** (Sabah), *A. inermis* **n. sp.** (Sabah), *A. infans* **n. sp.** (Sabah), *A. intermedius* **n. sp.** (Sarawak, Malaysische Halbinsel), *A. invenustus* **n. sp.** (Sabah), *A. lautus* **n. sp.** (Sarawak, Sumatra), *A. makiharai* **n. sp.** (Kalimantan), *A. miser* **n. sp.** (Sarawak, Malaysische Halbinsel), *A. morpheus* **n. sp.** (Sabah), *A. neglectus* **n. sp.** (Sabah), *A. nepenthes* **n. sp.** (Sabah), *A. pallidior* **n. sp.** (Sabah), *A. pullus* **n. sp.** (Sabah), *A. seductus* **n. sp.** (Sarawak), *A. semotus* **n. sp.** (Sabah), *A. seponens* **n. sp.** (Kalimantan), *A. zynthiae* **n. sp.** (Sabah). Der Aedoeagus von *A. verecundus* Bremer, 2010 wird abgebildet.

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1 Introduction

In the first part of the revision of Amarygmini of Borneo (Bremer 2010a) a key to the genera was published, and two new genera of Amarygmini (each with one new species) and 47 new species of *Amarygmus* Dalman, 1823 had been described. In this second part of the revision 32 new species of *Amarygmus* are specified, thus the current total number of valid species of *Amarygmus* on Borneo is 179. There are some more species which must still be described. An identification key to all *Amarygmus* species known from Borneo will be provided in one of the next parts of this series. Another part will deal with species of other genera of Bornean Amarygmini.

Abbreviations of depositories

BMNH	Natural History Museum, London, U. K.
CA	Collection of Dr. Kiyoshi Ando, Osaka, Japan
CFL	Collection of Dr. Andreas Floren, University of Würzburg, Germany (later to be deposited in ZSM)
CG	Collection of Dr. Roland Grimm, Tübingen, Germany
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany
SSB	Collection of Stanislav Bečvář, České Budějovice, Czech Republic

ZSM Zoologische Staatssammlung, Munich, Germany
ZSMB Collection of the author, now property of ZSM

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Many thanks also to my son, Ulf Bremer (Taipei), whom I owe many amarygmine specimens from Sabah, and to George Kok Khiong Hong (Kota Kinabalu) for his logistic support during collection activities. I am also indebted to Dr. A. Floren (University of Würzburg), who contributed many specimens which he collected by fogging trees in Sabah, and to F. Forman (Ostercappeln) who prepared the figures of the newly described species.

Thanks are extended to Dr. R. Grimm and Dr. W. Schawaller for the review of the manuscript.

2 Materials and Methods

Materials

The material studied in this paper is from the same sources as cited in part I of this series (Bremer 2010a: 141). Additional material was contributed by Dr. A. Floren (Würzburg).

Morphometry

"Body length" represents the distance between the middle of anterior edge of the pronotum and the apices of the elytra, "body width" the maximum width across the elytra; "length of elytra" the distance between the base of the scutellum and the apices of the elytra (measured in dorsal view); "length of pronotum" the distance between the middle of their anterior and posterior edges (measured in the plain through these points).

Data on the labels

The data on the labels are given in the original language and with the abbreviations as used by the collectors.

3 Descriptions of new species

Amarygmus acerbus n. sp.
(Fig. 1A–H)

Holotype (♂): Indonesia, Kalimantan, Bukit Bangkirai near Balikpapan, 24.V.1999, H. Makihara leg. (CA).

Etymology

Acerbus (Lat.) = gloomy.

Diagnosis

Of medium size, elongate, narrow, slightly oval. Elytra dark, nearly black, opaque, very long and markedly convex transversely; with rows of medium-sized, somewhat elongate punctures and flat intervals. Base of pronotum nearly as wide as base of elytra. Frons not very wide. Antennae short. Legs short; male protarsomeres 1–3 moderately enlarged; inner apical fifth of pro- and mesotibiae with closely set, distant yellow hairs; metatarsomere 1 very long.

Amarygmus acerbus n. sp. belongs to a group of species with long, narrow elytra. But all species of this group on Borneo, except *A. mitschkei* (Pic, 1938) (redescribed and illustrated by Bremer 2003a: 67–69), *A. selatanus* (Masumoto et Makihara, 1997) (see Masumoto & Makihara 1997: 139–140, fig. 127; also described and illustrated as *A. bellulus* by Bremer 2003a: 86–89), and *A. makiharai* n. sp., have lustrous elytra and not opaque ones as *A. acerbus*. In contrast to *A. acerbus*, the species *A. mitschkei*, *A. selatanus*, and *A. makiharai* have a violet bottom of the punctures of the elytral rows and a more or less large violet halo around these punctures.

Description

Measurements: Body length 8.52 mm; body width 4.06 mm. – Ratios: Pronotum: width/length 1.92; width hind corners/width front corners 1.77. Elytra: length/width 1.73; length elytra/length pronotum 3.67; maximum width elytra/maximum width pronotum 1.10.

Colouration: Elytra dark green, nearly black, opaque. Pronotum green, with purple iridescence. Frons green, genae and clypeus black. Legs and antennae black. Underside dark brown.

Head: Frons relatively narrow, as wide as length of antennomere 4, with minute, closely set punctures posteriorly and less closely set punctures anteriorly. Genae slightly raised, anteriorly terminating well anterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture markedly incised in its middle part, scarcely incised laterally. Clypeus moderately stretched forwards, slightly convex longitudinally, with punctures somewhat larger than those on frons, not very closely set. Mentum reversely trapezoidal; with somewhat bent, flat, lustrous margins, space in between opaque, convex transversely. Underside of neck with medium-sized, closely set punctures. Mandibles sulcated on outer surface, apically bifid.

Pronotum: Narrow, markedly convex transversely, moderately convex longitudinally. Widest at base, anteriorly narrowing and bent. Hind corners angular, in dorsal view with an angle of about 100°; front corners rounded. Anterior margin slightly excavated. Lateral and anterior margins bordered. Lateral borders in dorsal view very narrowly visible in the posterior three-fourths. Front and hind corners in lateral view rounded, moderately obtuse. Surface with small, distinct, relatively closely set punctures.

Scutellum: Triangular, with a few tiny punctures, sides slightly rounded.

Elytra: Elongate, narrow, slightly oval, markedly convex transversely, moderately convex longitudinally. Maximum height near the middle. Shoulders somewhat prominent. Apices of elytra mutually rounded. Lateral

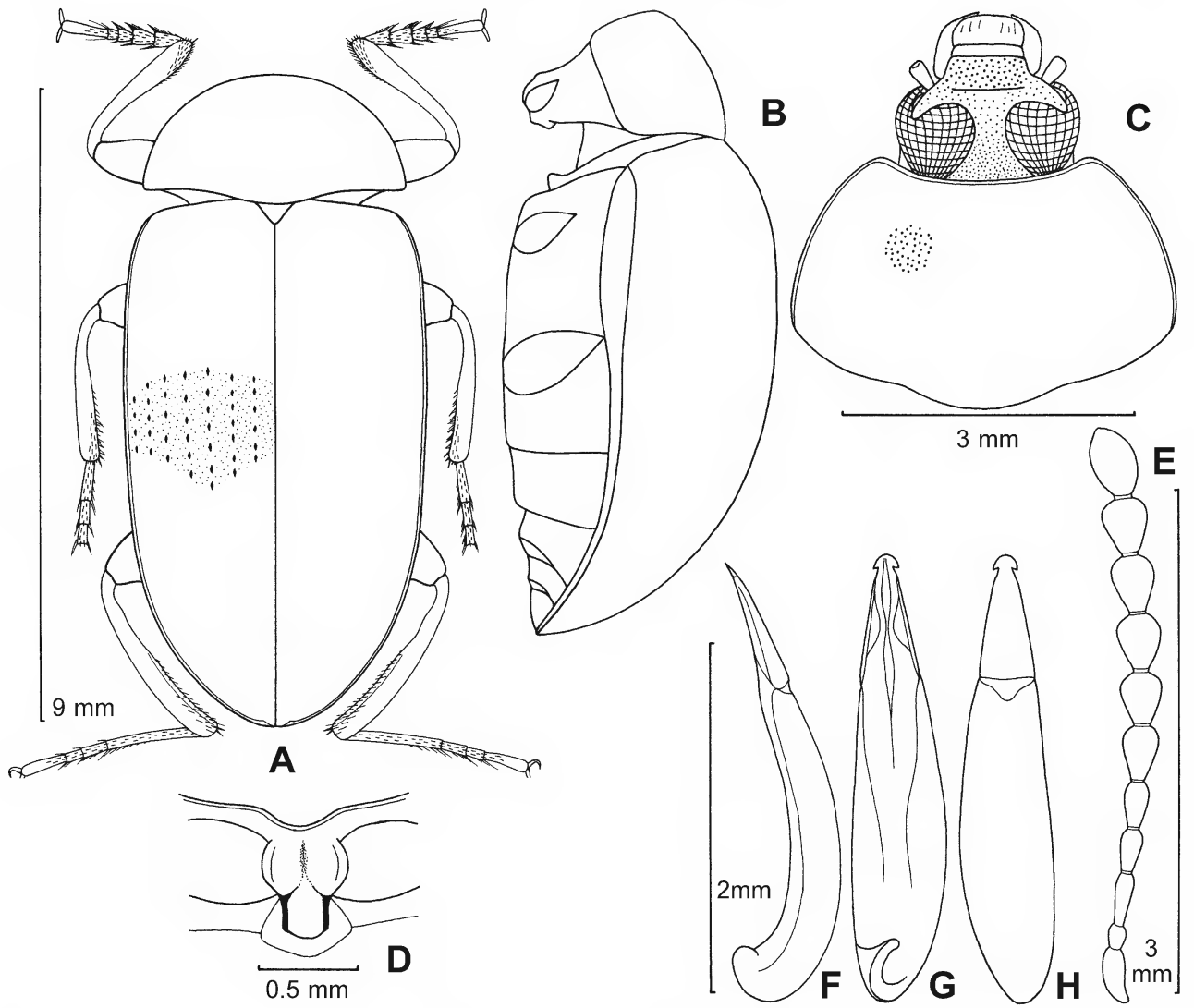

Fig. 1. *Amarygmus acerbus* n. sp. – **A** Habitus, ♂. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna. **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

edges very narrowly visible on the whole length in dorsal view. With rows of small, elongate punctures; distance between punctures on disc in row 4 approximately 2 times diameter of a puncture; about 29 punctures in row 4. Intervals flat, covered with minute, distinct, relatively closely set punctures.

Prosternum: Anterior margin continuously and narrowly bent upwards. Apophysis relatively narrow, moderately ascending between anterior margin and the level of procoxae, descending between procoxae and apex; along procoxae somewhat widened and lateral margins widened and raised, space in between with a median groove; sides behind procoxae subparallel and lateral margins somewhat lifted upwards; apically narrowly rounded and with a median keel.

Mesosternum: Posterior part long, with a deep, longitudinal sulcus on each side; anterior margin markedly widened near the median excavation.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Anterior part of disc with two transverse rows of medium-sized punctures, posterior part with widely separated, tiny punctures. Median line slightly incised in its posterior half.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Sternites 1+2 with small, shallow, closely set punctures. Punctures on sternites 3–5 smaller. Sternite 5 posteromedially depressed and slightly excavated.

Antennae: Short, reaching to anterior fifth of elytra. Length/width ratio of antennomeres 1–11 equals to

15:8 / 7:7 / 14:7 / 12:7 / 13:7 / 15:11 / 16:13 / 18:13 / 17:12 / 15:13 / 20:13.

Legs: Short. Femora thickened towards the second third. Protibiae slightly concave on outer side, slightly widened on inner apical side, inner apical third with short, closely set hairs. Mesotibiae moderately bent in basal half, nearly straight in apical half, inner apical half with short to medium, relatively closely set hairs. Metatibiae moderately bent, inner apical half with semi-erect hairs of medium length. Protarsomeres 1–3 moderately enlarged. Lengths of protarsomeres 1–5 as 7:7:5:5:14, lengths of mesotarsomeres 1–3 [4 and 5 missing] 13:8:5, lengths of metatarsomeres 1–4 as 31:10:6:14.

Aedeagus: See Fig. 1F–H.

Amarygmus adelphus **n. sp.**
(Fig. 2A–H)

Holotype (♂): Indonesia, Kalimantan, Bukit Bangkirai near Balikpapan, 8.VI.1999, H. Makihara leg. (CA).

Paratypes: Same data as holotype, but 17.I.2000 (1 ♀ CA, 1 ♀ ZSMB). – Indonesia, Kalimantan, Papagaran, 25.–30.X.2000, Y. Yokoi leg. (1 ♀ CA).

Etymology

Ἀδελφός (Greek) = brotherly.

Diagnosis

Small, oval, convex transversely and longitudinally. Elytra with rows of medium-sized punctures and flat, scarcely punctured intervals. Pronotum short, wide. Frons relatively narrow. Fronto-clypeal suture deeply incised across the whole width of the head. Antennae of medium length and nearly of the same length in both sexes. Elytra greenish blue, pronotum sea-blue, legs dark.

With respect to size, shape, width of frons and length of antennae, *Amarygmus adelphus* n. sp. is especially close to *A. delicatulus* Bremer, 2010 (Bremer 2010a: 182–184) from Sabah. *A. delicatulus*, however, has wider distances between the punctures of the elytral rows, its fronto-clypeal suture is only incised in the middle and does

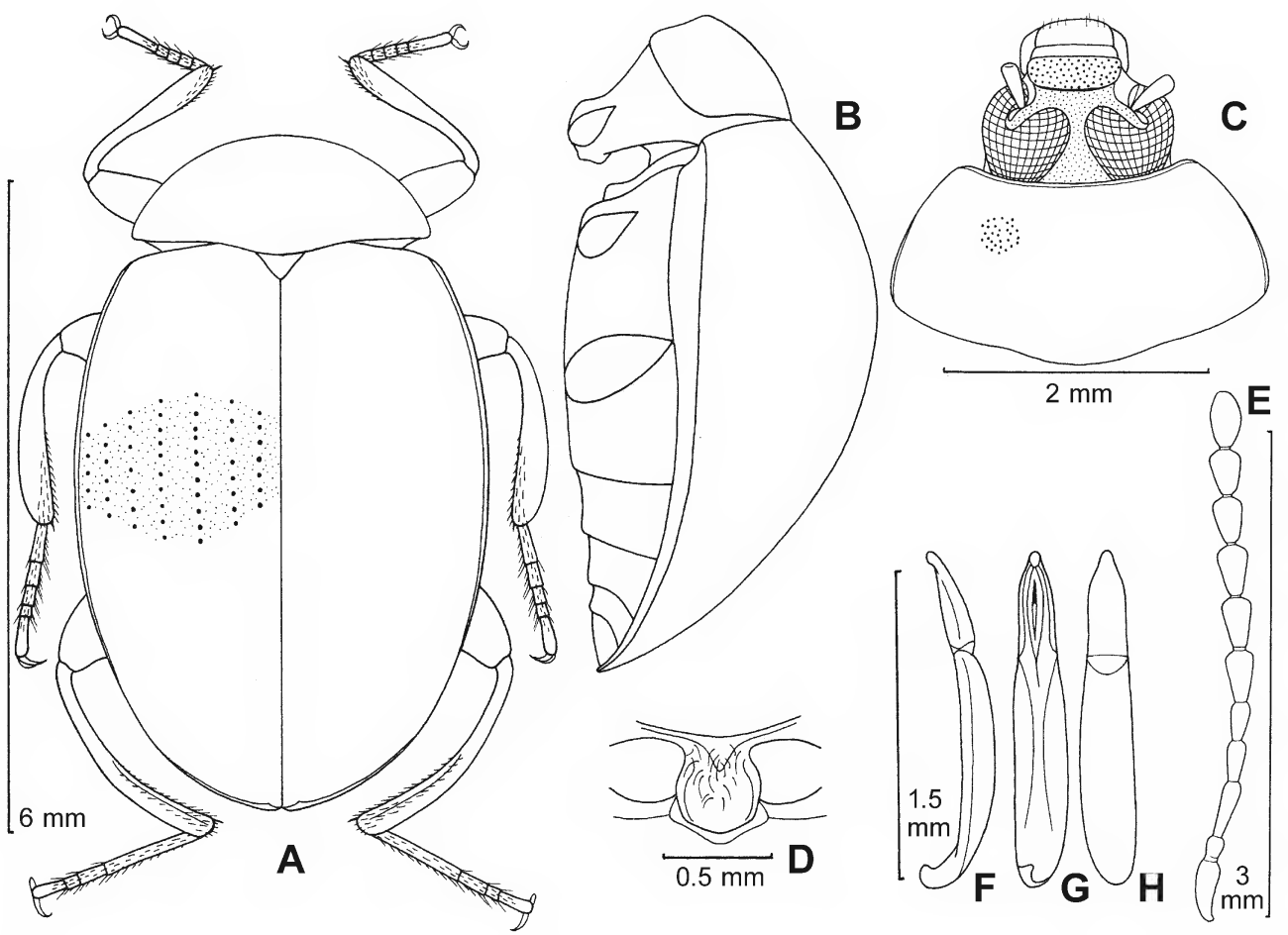

Fig. 2. *Amarygmus adelphus* n. sp. – **A** Habitus, ♂. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna. **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

not have a deep incision across the head, and the elytra are reflecting in different bright colours while the elytral colour of *A. adelphus* is only greenish blue.

The new species is also similar to *A. splendidulus* (Fabricius, 1801) (redescribed and illustrated by Bremer 2005a: 52–54). *A. splendidulus* has the same size and shape, a similarly incised fronto-clypeal suture, same width of frons, same length of antennae, a similar punctation and the absence of essential sexual characters. However, the elytra are much more colourful in *A. splendidulus*, the mesotibiae are straight, and the metatibiae are straight in the basal half and markedly incurved in the apical half while those of *A. adelphus* are uniformly bent.

For differences to *A. botryitidis* n. sp. see under diagnosis of this species.

Description

Measurements: Body length 5.65–5.97 mm; body width 3.66–3.70 mm. – Ratios: Pronotum: width/length 2.09–2.23; width hind corners/width front corners 1.69–1.86. Elytra: length/width 1.33–1.36; length elytra/length pronotum 3.88–4.13; maximum width elytra/maximum width pronotum 1.37–1.39.

Colouration: Ground colour of elytra greenish blue and, when the light hits the surface in direction from the front, slightly purple; lustrous. Pronotum sea-blue, lustrous. Head black. Antennomeres 1–4 dark brown, 5–11 black. Legs dark brown. Underside brown, lustrous.

Head: Upperside moderately microreticulated. Frons narrow, as wide as length of antennomere 2, with indistinct, small punctures. Genae narrow, only slightly raised and scarcely covering the base of antennomere 1, anteriorly terminating shortly posterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture distinctly incised across the whole width of the head, somewhat depressed. Clypeus moderately stretched forwards, slightly convex transversely and longitudinally, with small, not very closely set punctures. Mentum widening anteriorly, with somewhat bent sides; lateral margins flat, lustrous, space in between more dull, slightly convex transversely. Underside of neck with large, very closely set punctures. Mandibles sulcated on outer surface, apically bifid.

Pronotum: Wide, short, moderately convex transversely, slightly convex longitudinally. Widest at base, anteriorly narrowing and bent. Hind and front corners in dorsal view narrowly rounded. Anterior margin very slightly excavated. Lateral and anterior margins bordered. Lateral borders in dorsal view narrowly visible in the basal three-fifths. Frons and hind corners in lateral view with a slightly obtuse angle. Surface with minute, not very closely set punctures.

Scutellum: Triangular, impunctate.

Elytra: Oval, convex transversely and longitudinally. Maximum width and height somewhat anterior to the middle. Shoulders rounded. Apices of elytra mutually rounded. Lateral edges very narrowly visible on the whole length in dorsal view. With rows of medium-sized punctures; distance between punctures on disc in row 4 about 1–2 times diameter of a puncture; about 30 punctures in row 4. Intervals flat, with very tiny, widely separated punctures.

Prosternum: Anterior margin narrowly bent upwards, except in the middle where a small process is directed towards apophysis. Apophysis oval, widest just posterior to procoxae, lateral margins narrowly bordered, space in between with a median groove; surface with irregularly set hairs of medium length.

Mesosternum: Posterior part short, its anterior margin widely excavated in the middle. With a few short, semi-erect hairs.

Metasternum: Anterior margin between mesocoxae rounded, broadly bordered. Anterior part of disc with medium-sized punctures, posterior part with minute punctures. Median line slightly incised in its posterior half.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Sternite 1 with a few minute punctures, sternites 2–5 with a few tiny punctures.

Antennae: Of medium length, reaching to anterior two-fifths of elytra. Length/width ratio of antennomeres 1–11 equals to 17:6 / 8:5 / 17:5 / 12:5 / 12:6 / 16:8½ / 17:9 / 18:9 / 18:9 / 18:9 / 19:9.

Legs: Short. Femora distinctly thickened and compressed towards the second third. Protibiae straight and somewhat thickened apically. Mesotibiae moderately bent, thickened apically. Metatibiae strongly bent. Male protarsomeres 1–3 not widened. Lengths of protarsomeres 1–5 as 3:3:3:3:10, lengths of mesotarsomeres 1–5 as 9:6:5:4:10, lengths of metatarsomeres 1–4 as 15:6:4:9.

Aedeagus: See Fig. 2F–H.

Amarygmus venustus admixtus **n. ssp.**
(Figs. 3A–H, 4B)

Holotype (♂): Borneo, Sabah W., Crocker Range, W. of Apin Apin, V.1999; Z. Smirž (ZSMB).

Paratypes: Same data as holotype (1 ♂ ZSMB). – Sabah, Crocker Mts., Gunung Emas [primary mountainous forest], nachts, auf der Rinde von Bäumen [= at night, on bark of trees], 4.II.2006, H. J. Bremer leg. (1 ♀ ZSMB). – Sabah, Crocker Mts., 500–1900 m, Gunung Emas, 6.–21.V.1995, Ivo Jeniš leg. (10 ZSMB). – Crocker Mts., Gunung Emas, 1600 m, 15.V.2005, R. Grimm (1 CG). – Same data as before, but 4.II.2006 (2 CG, 1 ZSMB). – Same data as before, but 16.–21.III.2007 (1 CG). – Same data as before, but 1.IV.2007 (4 CG). – Sabah, Kinabalu NP, HQ vic., 22.–25.V.2005, R. Grimm (2 CG). – Same data as before, but 11.–13.II.2006 (1 CG). – Same data as before, but 28.XI.2006 (1 CG). – Sabah, Crocker Mts., Gunung Alab, 1650 m, 20.XI.2006, R. Grimm (1 CG). – Sabah W, Crocker Mts. W, route Keningau–Papar, V.1999, Z. Smrž leg. (1 ZSMB). –

Malaysia, Sabah prov., Banjaran Crocker Mts., 10 km SW Gunung Alab, 790–850 m, 4.–9.V.1996, M. Štrba & R. Hergovits leg. (1 ♂, 1 ♀ SSB). – Sabah, Kinabalu NP, Poring vic., 380 m, 9.–11.III.2007, R. Grimm (2 ♀♀ CG).

Etymology

Admixtus (Lat.) admisceo, admiscui, admixtum = admixed.

Diagnosis

Elongate oval. Pronotum and elytra forming common outlines of longitudinal vault and lateral margins. Elytra markedly convex transversely and longitudinally. Upperside colourful, iridescent. Elytra with rows of small punctures and flat intervals. Frons relatively narrow. Antennae long. Protarsomeres 1–3 not enlarged in males. Antennae in both sexes approximately of the same length.

The new subspecies is nearly identical with *A. venustus venustus* Bremer, 2002 from Peninsular Malaysia (Bremer 2002a: 49–51), but the punctures of the elytral rows of *A. venustus admixtus* n. ssp. from higher altitudes of the Crocker Mountains of Sabah are definitely smaller than those of *A. venustus venustus*, compare Fig. 4A–B. A specimen from Sarawak is somewhat intermediate between both taxa.

A. venustus admixtus has a shape nearly identical to *A. assignatus* Bremer, 2010 (Bremer 2010a: 168–170) from the same area. *A. assignatus*, however, is less colourful, its frons is slightly wider, and the elytral rows have slightly larger punctures.

With respect to size, shape and colouration, the new subspecies is also close to *A. praestans* Bremer, 2002 (Bremer 2002a: 32–33) from the same localities, but *A. praestans* has a uniformly yellow or brown antennomere 11, the elytra are slightly shorter and more convex longitudinally, and the punctures of the elytral intervals are more distinct.

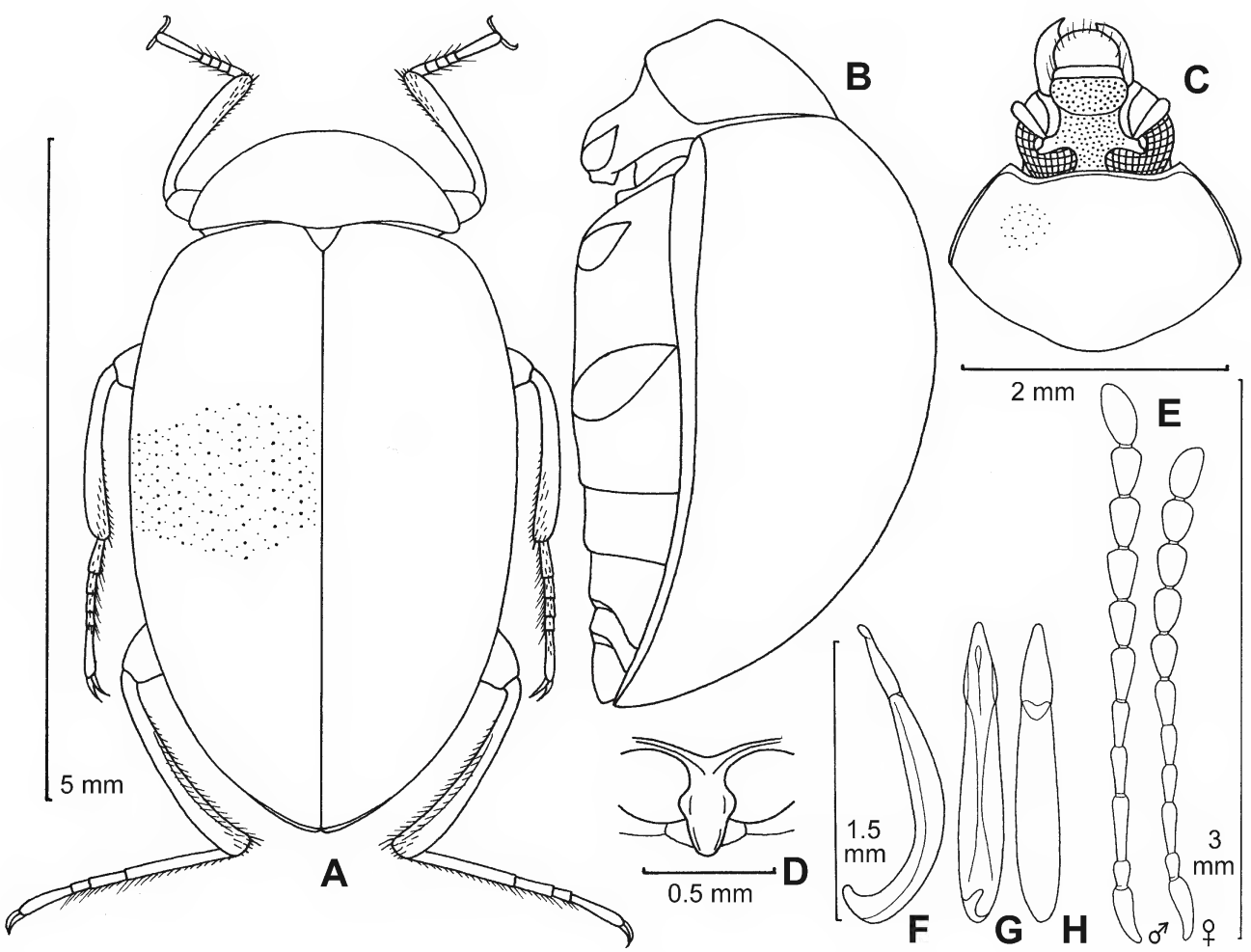

Fig. 3. *Amarygmus venustus admixtus* n. ssp. – **A** Habitus, ♂. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna. **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

Description

Measurements: Body length 4.58–6.10 mm; body width 2.68–2.90 mm. – Ratios: Pronotum: width/length 1.76–1.83; width hind corners/width front corners 1.60–1.73. Elytra: length/width 1.44–1.54; length elytra/length pronotum 3.59–3.86; maximum width elytra/maximum width pronotum 1.40–1.44.

Colouration: Upperside very lustrous and with iridescence; ground colour blue or green, with marked reflections in orange, blue, and green. Frons green or blue, clypeus black. Underside and basal three-fourths of femora brown, apical fourth of femora and tibiae black in mature specimens. Tarsi brown. Antennomeres 1–5 brown, 6–11 black (apical half of antennomere 11 brightened).

Head: Eyes very large. Frons relatively narrow, about as wide as length of antennomere 4. Genae very short, slightly raised, anteriorly terminating behind the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture arched, incised across the whole width of the head. Clypeus moderately stretched forwards, somewhat convex transversely. Clypeus and frons with small, not very closely set punctures. Mandibles with a sulcus on outer surface, apically bifid.

Pronotum: Not very wide, markedly convex transversely (due to the strong convexity front corners not visible in dorsal view), moderately convex longitudinally. Widest at base, anteriorly narrowing and bent. Hind corners rounded, obtuse; front corners about rectangular. Anterior margin straight. Lateral and anterior margins bordered. Lateral borders in dorsal view only very narrowly visible in the posterior fourth. Front corners in lateral view somewhat rounded-obtuse; hind corners angular and more obtuse than front corners. Surface with minute, widely separated, indistinct punctures.

Scutellum: Triangular, impunctate.

Elytra: Elongate oval, markedly convex transversely, convex longitudinally. Maximum width and height slightly anterior to the middle. Shoulders not prominent. Apices of elytra mutually rounded. Lateral edges not visible in dorsal view. With rows of very small, widely separated punctures which become evanescent towards apex; distance between punctures on disc in row 4 about 4–5 times diameter of a puncture; about 24 punctures in row 4. Intervals everywhere flat, with widely separated small punctures which are only slightly smaller than punctures of the rows; tiny hairs visible (at 100-fold magnification) at apex.

Prosternum: Anterior margin, except in the middle, narrowly bent upwards. Apophysis narrow, between anterior margin and procoxae somewhat ascending ventrad, posterior to procoxae somewhat descending; along procoxae lateral margins raised and thickened; space in between with a deep, median groove; apically rounded.

Mesosternum: Posterior part narrowing posteriorly, its anterior margin excavated in the middle.

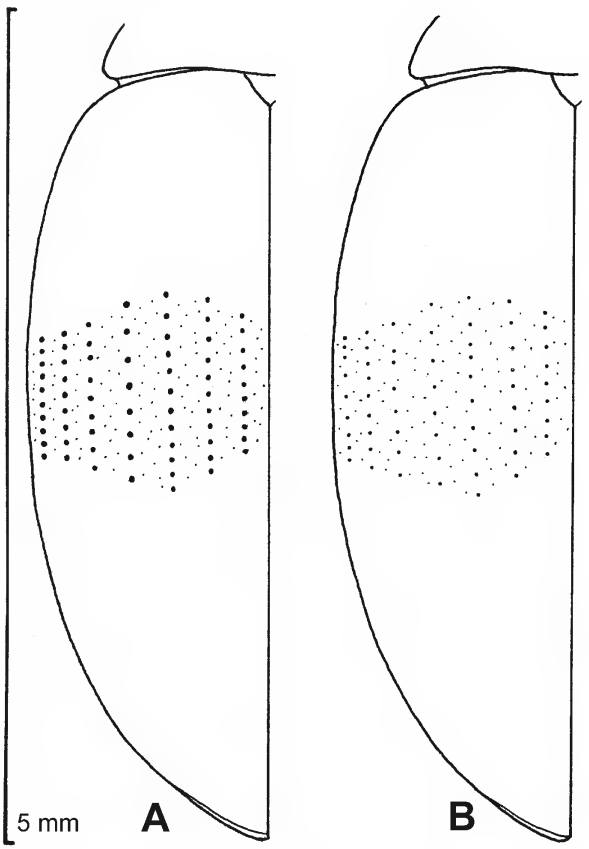

Fig. 4. *Amarygmus venustus*, left elytron. – **A** *A. venustus venustus* Bremer, 2002. **B** *A. venustus admixtus* n. ssp.

Metasternum: Anterior margin between mesocoxae narrowly rounded, bordered. Disc convex transversely, with tiny, sparse punctures and small, recumbent hairs in both sexes. Median line incised in the posterior half.

Sternites: Anterior margin of sternite 1 between metacoxae narrowly ogival, bordered. Discs of sternites nearly impunctate (at 50-fold magnification), and with a few tiny, recumbent hairs in both sexes. Sternite 5 posteromedially not depressed in males.

Antennae: Long, reaching to anterior three-fifths of elytra. Length/width ratio of antennomeres 1–11 in male equals to 15:6 / 8:5 / 17:5 / 12:5 / 13:5 / 15:6½ / 13:7 / 14:7 / 13:7 / 12½:7 / 17:7.

Legs: Short. Femora compressed, thickened towards the second third. Protibiae nearly straight; meso- and metatibiae moderately bent. Lengths of protarsomeres 1–5 as 5:4½:4:4:19, lengths of mesotarsomeres 1–5 as 13:7:6:5:20, lengths of metatarsomeres 1–4 as 37:14:8:20.

Aedeagus: See Fig. 3F–H.

Amarygmus agnatus **n. sp.**
(Fig. 5A–E)

Holotype (♀): Sabah, 5 km NNE of Apin Apin [park-like area], 500 m, at night, on bark of a tree, 18.II.2006, H. J. Bremer leg. (ZSMB).

Etymology

Agnatus (Lat.) = to be born in addition

Diagnosis

Small, oval, inconspicuous. Upperside brown. Elytra with rows of small, not very widely separated punctures. Elytral intervals on disc flat, with tiny punctures. Frons of medium width. Antennae of medium width. Legs short, thin.

Amarygmus agnatus n. sp. somewhat resembles *A. assignatus* Bremer, 2010 (Bremer 2010a: 168–170) by the form of the elytral puncture rows, but *A. agnatus* has pronotum and frons wider, elytra wider and shorter, and antennae shorter.

Description

Measurements: Body length 5.25 mm; body width 3.26 mm. – Ratios: Pronotum: width/length 1.81; width hind corners/width front corners 1.70. Elytra: length/width 1.37; length elytra/length pronotum 3.61; maximum width elytra/maximum width pronotum 1.46.

Colouration: Upperside brown, slightly lustrous and with a weak metallic shine. Legs light brown. Underside as brown as femora, lighter brown than upperside, lustrous. Antennomeres 1–4 light brown, 5 brown, 6–11 dark brown.

Head: Frons of medium width. Genae short, anteriorly terminating clearly posterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture clearly incised across the whole width of the head. Clypeus moderately stretched forwards, convex transversely and longitudinally. Clypeus and frons with minute, shallow, relatively closely set punctures and tiny hairs which originate from these punctures. Mentum uniformly lustrous, widening anteriorly and with rounded hind corners; lateral

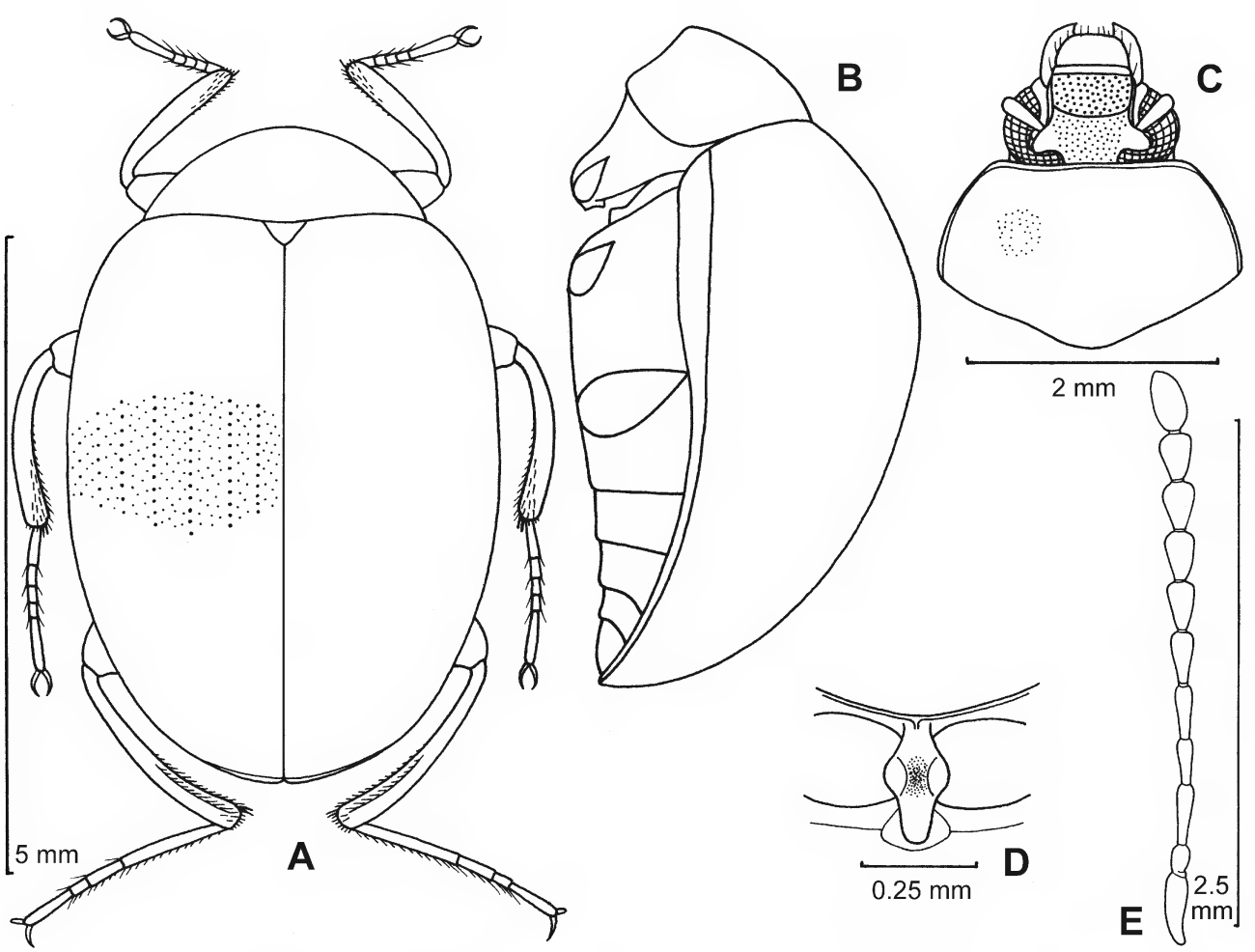

Fig. 5. *Amarygmus agnatus* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

margins flat, space in between slightly convex transversely. Underside of neck with a few small punctures and a few tiny, erect hairs. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

P r o n o t u m : Wide, short, moderately convex transversely and slightly convex longitudinally. Widest at base; sides bent, narrowing towards front corners. Hind corners nearly rounded and markedly obtuse; front corners in dorsal view barely rounded and very slightly protruded. Anterior margin slightly excavated. Lateral and anterior margins bordered. Lateral borders in dorsal view very narrowly visible. Front and hind corners in lateral view markedly obtuse. Surface with minute, shallow, indistinct, irregularly set punctures.

S c u t e l l u m : Triangular, impunctate.

E l y t r a : Oval, markedly convex transversely and longitudinally. Maximum height and width slightly anterior to the middle. Shoulders somewhat prominent. Apices of elytra mutually rounded. Lateral edges very narrowly visible posterior to the middle in dorsal view. With inconspicuous rows of small punctures; distance between punctures on disc in row 4 about 2–3 times diameter of a puncture; about 34 punctures in row 4. Intervals on disc flat, barely convex laterally, with tiny, not very closely set punctures.

P r o s t e r n u m : Anterior margin narrowly bent upwards. Apophysis narrow, ascending between anterior margin and procoxae, and somewhat descending posteriorly to apex; along procoxae markedly widened, margins widened and distinctly raised ventrad; space in between with a median groove; posterior to procoxae lateral margins straight and slightly narrowing; apically broadly rounded.

M e s o s t e r n u m : Anterior margin of posterior part excavated in the middle, lateral margins somewhat narrowing posteriorly. Surface of posterior part smooth.

M e t a s t e r n u m : Anterior margin between mesocoxae rounded, bordered. Anterior part of disc with a few small punctures, middle and posterior parts with tiny, widely separated punctures and recumbent hairs of medium length. Median line depressed on the whole length.

S t e r n i t e s : Anterior margin of sternite 1 between metacoxae ogival, with faint borders. Sternites impunctate, with tiny, widely separated, recumbent hairs.

A n t e n n a e : Short, reaching to anterior third of elytra. Length/width ratio of antennomeres 1–11 equals to 14:7 / 7:5 / 16:5 / 10:5 / 11:5½ / 13:7 / 13:8 / 13:9 / 13:9 / 12½:9 / 16:9.

L e g s : Short. Femora and tibiae slender. Femora somewhat thickened towards the second third. Protibiae slightly bent. Mesotibiae moderately bent, with semi-erect bristles on inner side. Metatibiae slightly bent in basal half, moderately bent in apical half. Lengths of protarsomeres 1–5 as 5:4:4:4:20, lengths of mesotarsomeres 1–5 as 12:8:7:5½:20, lengths of metatarsomeres 1–4 as 39:14:8:21.

Amarygmus amoenus **n. sp.**
(Fig. 6A–E)

H o l o t y p e (♂): Borneo, Sabah, Danum Valley [primary lowland rainforest], 4°58'N 117°48'E, M. D. F. Ellwood, *Parashorea tomentella*, *Asplenium nidus*, EastTrail 7, FogTray 5, 11.VII.1999, 444 [right metatibia and right tarsi deformed] (BMNH).

P a r a t y p e : Borneo, Sabah, Danum Valley, 4°58'N 117°48'E, M. D. F. Ellwood, *Parashorea tomentella*, *Asplenium nidus*, EastTrail 7, FogTray 4, 11.VII.1999, 444 (1 ♀ BMNH).

Note: No preparation of the genitalia was performed because of the rigidity of the holotype specimen.

Etymology

Amoenus (Lat.) = graceful.

Diagnosis

Of medium size, oval, very lustrous. Upperside blackish golden. Elytra with markedly incised striae and clearly convex, impunctate intervals. Frons wide, legs and antennae of medium length. Metatarsomere 1 long.

Amarygmus amoenus n. sp. is somewhat similar to *A. zynthiae* n. sp. from the same locality; see under diagnosis of this species.

Description

M e a s u r e m e n t s : Body length 5.41+5.49 mm; body width 3.19+3.22 mm. – Ratios: Pronotum: width/length 1.96+2.00; width hind corners/width front corners 1.76+1.78. Elytra: length/width 1.39+1.41; length elytra/length pronotum 4.00+4.07; maximum width elytra/maximum width pronotum 1.43+1.44.

C o l o u r a t i o n : Upperside very lustrous, golden black. Underside brown, with reduced lustre. Femora and tibiae black, tarsi brown. Antennomeres 1–3 brown, 4–11 black (apical half of antennomere 11 brightened).

H e a d : Frons wide, as wide as combined length of antennomeres 3+4, with widely separated, minute punctures. Genae short, anteriorly terminating posterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture slightly incised. Clypeus moderately stretched forwards, slightly convex transversely, with punctures somewhat larger than those of frons; very short hairs originating from these punctures. Mentum narrow at base, sides somewhat bent, widening anteriorly; lateral margins flat and lustrous, space in between convex, microreticulated, and with a median ridge. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

P r o n o t u m : Wide, short, relatively flat; uniformly convex transversely, slightly convex longitudinally. Widest at base, roundedly narrowing in basal half, narrowing with straight margins in anterior half. Hind corners rounded, obtuse; front corners in dorsal view approximately rectangular. Anterior margin very slightly excavated. Lateral

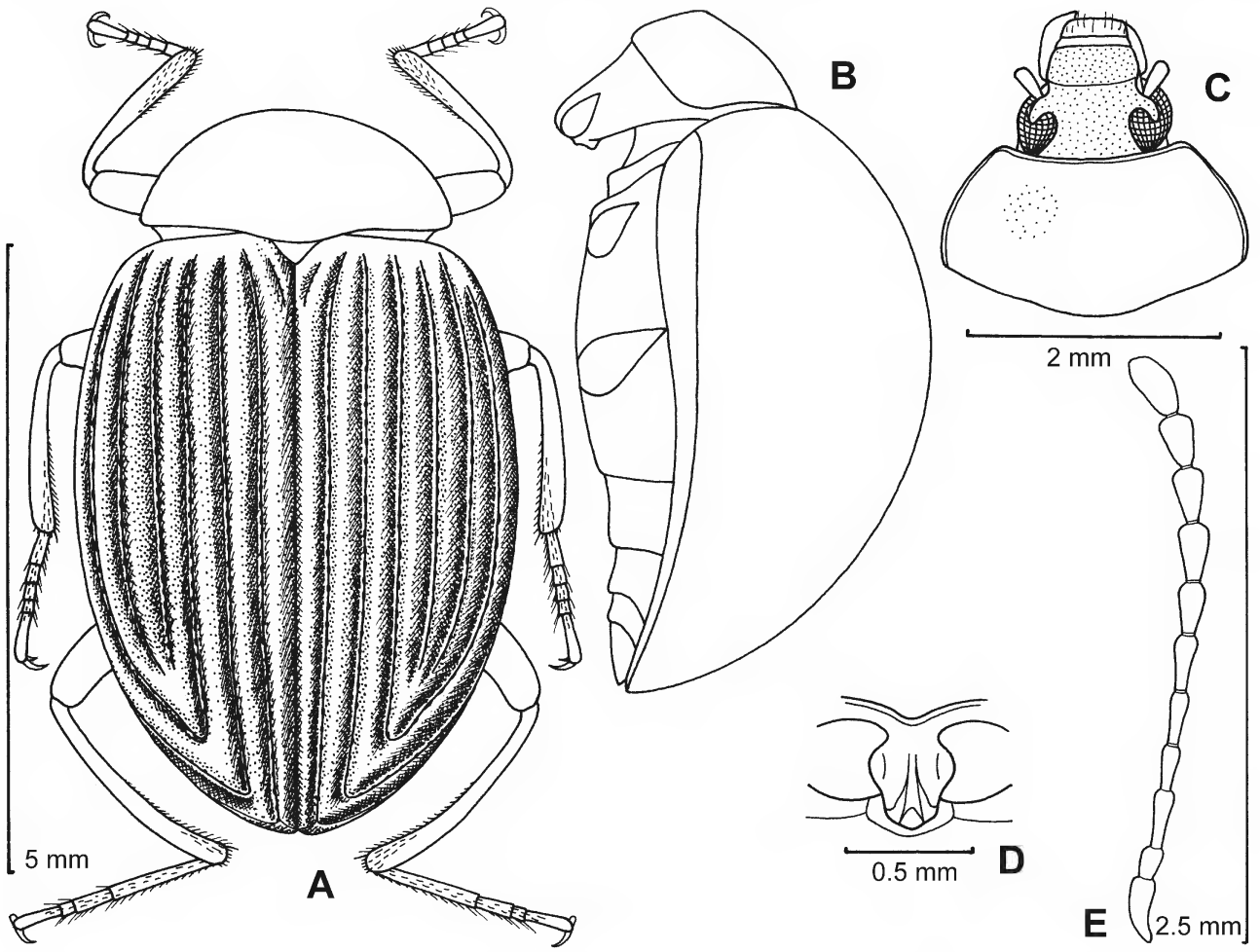

Fig. 6. *Amarygmus amoenus* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

and anterior margins bordered. Lateral margins in dorsal view very narrowly visible. Front corners in lateral view rectangular; hind corners angular, widely obtuse. Surface with tiny, very widely separated punctures.

Scutellum: Triangular, impunctate.

Elytra: Somewhat elongate oval, convex transversely and longitudinally. Maximum width and height slightly anterior to the middle. Shoulders slightly prominent. Apices of elytra mutually rounded. Lateral edges not visible in dorsal view. With distinctly incised striae with elongate, narrow, indistinct punctures. Intervals convex, impunctate.

Prosternum: Anterior margin continuously and narrowly bent upwards, slightly retracted towards apophysis at midlength. Apophysis not very wide, its lateral margins markedly raised, space in between with a deep median groove; apicomedially with a lifted nose.

Mesosternum: Relatively wide. Posterior part microreticulated, its anterior margin only slightly excavated in the middle.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Disc with some shallow, indistinct, medium-sized punctures anteriorly, a few tiny punctures with tiny hairs posteriorly. Median line very slightly incised in its posterior half.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Sternites with a few very tiny punctures.

Antennae: Of medium length, reaching to middle of elytra. Length/width ratio of antennomeres 1–11 equals to 12:5 / 8:5 / 13:4½ / 11½:5 / 12:5 / 15:6 / 15:7½ / 14:7½ / 14:8 / 13½:8 / 17:8.

Legs: Of medium length, relatively tender. Femora moderately widened towards the second third. Pro- and mesotibiae straight; metatibiae straight in the basal half, incurved in the apical half. Lengths of protarsomeres 1–5 as 7:7:6:4:16, lengths of mesotarsomeres 1–5 as 11:10:8:6:18, lengths of metatarsomeres 1–4 as 36:12:5:19.

Amarygmus astutus **n. sp.**
(Fig. 7A–E)

Holotype (sex not determined): Malaysia, Borneo, Sarawak, Santubong Peninsula, Permai Rainforst Resort [primary lowland rainforest], 10–200 m, at night, on bark of trees, 23.–27.III.2009, R. GRIMM (CG).

Paratypes: Same data as holotype (2 CG, 2 ZSMB).

Etymology

Astutus (Lat.) = insidious.

Diagnosis

Tiny, ovate. Elytra dark coppery, with slightly incised striae and small to medium-sized punctures; intervals nearly flat and with sparse, tiny punctures. Pronotum dark (nearly filthy) green, with distinct, not very closely set punctures. Frons relatively narrow. Antennae of medium length. Legs brown to dark brown. Metatarsomere 1 relatively long.

Amarygmus astutus n. sp. is one of the smallest species of the genus. The three similarly tiny species *A. fraterculus* Bremer, 2002 (BREMER 2002a: 23) from Sabah, Sarawak, and Sumatra, *A. abditus* Bremer, 2007 (BREMER 2007: 3–6) from Sabah, and *A. miser* n. sp. differ as follows:

A. fraterculus has a bright brown elytral interval 1 (in contrast to the uniformly dark coloured elytra of *A. astutus* n. sp.), the punctures on elytra and pronotum are somewhat smaller, and the frons is somewhat narrower.

A. abditus has the elytra uniformly coloured as in *A. astutus*, but it is larger (body length 3.04–3.13 mm), the frons is somewhat wider (also in females), and the punctures of the elytral striae are definitely larger.

A. miser n. sp. is very similar to *A. astutus* concerning body shape, striae, strial punctures, and width of frons, but *A. miser* is somewhat larger, the antennae are somewhat longer, and the front corners of the pronotum are more angulate.

Description

Measurements: Body length 2.80–2.96 mm; body width 1.75–1.77 mm. – Ratios: Pronotum: width/length 1.94–2.06; width hind corners/width front corners

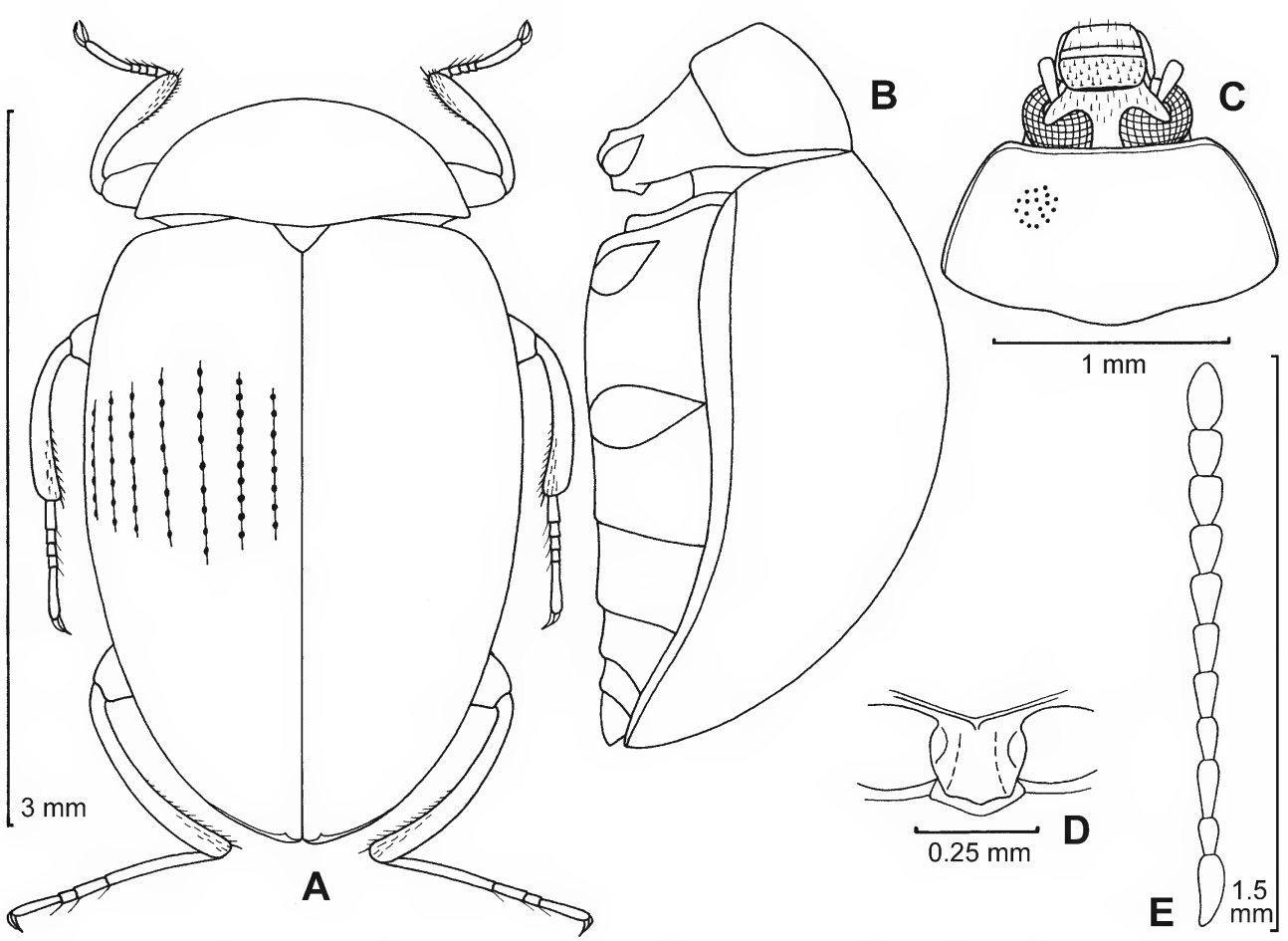

Fig. 7. *Amarygmus astutus* n. sp. – **A** Habitus. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

1.73–1.82. Elytra: length/width 1.37–1.42; length elytra/length pronotum 3.71–3.97; maximum width elytra/maximum width pronotum 1.29–1.31.

Colouration: Upperside lustrous. Pronotum dark, filthy green. Elytra uniformly dark copper coloured. Scutellum brown. Legs brown to dark brown. Antennomeres 1–5 brown, 6–11 black (antennomere 11 apically brightened). Underside brown, lustrous.

Head: Frons relatively narrow, approximately as wide as length of antennomere 4, situated on a higher level than clypeus; a sharp decline between frons and clypeus at the fronto-clypeal suture. Genae short, slightly raised, anteriorly terminating anterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture formed by the slope between frons and clypeus. Clypeus shortly stretched forwards, convex transversely. Punctures on clypeus medium-sized and relatively closely set, punctures on frons sparser and smaller. Mentum reversely trapezoidal; with flat, lustrous lateral margins, space in between convex transversely. Underside of neck with a few small punctures and a few tiny hairs. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Wide, markedly convex transversely, moderately convex longitudinally. Widest at base, anteriorly narrowing and bent. Hind corners in dorsal view angular, obtuse; front corners rounded. Anterior margin approximately straight. Lateral and anterior margins continuously bordered. Lateral borders in dorsal view narrowly visible on the whole length. Front corners in lateral view rectangular; hind corners obtuse, angular. Surface with medium-sized, distinct, irregularly set punctures.

Scutellum: Triangular, with a few tiny punctures.

Elytra: Ovate, not very wide, clearly convex transversely, less so longitudinally. Maximum width and height at the end of the first third. Shoulders slightly prominent. Apices of elytra mutually rounded. Lateral edges very narrowly visible in their middle part in dorsal view. With slightly incised and mainly superficial striae with small punctures; distance between punctures on disc in stria 4 about 3–4 times diameter of a puncture; about 18 punctures in stria 4. Intervals flat, slightly convex posterolaterally, with minute, not very closely set punctures.

Prosternum: Anterior margin narrowly bent upwards, with a small interruption in the middle. Apophysis nearly as wide as long, lateral margins rounded; lateral margins along procoxae slightly raised, space in between smooth and only with a slight median depression; apex very broadly pointed.

Mesosternum: Posterior part wide and short, on each side with a longitudinal sulcus which separates the lateral margins from the smooth middle; anterior margin excavated in the middle.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Anterior part of disc with a few small punctures with short, tender, recumbent hairs. Median line slightly incised.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, narrowly bordered. Sternites impunctate.

Antennae: Of medium length, reaching to anterior third of elytra. Length/width ratio of antennomeres 1–11 equals to 9:4 / 5½ / 9:3 / 5:3 / 6:3½ / 6:4½ / 6:4½ / 8:5 / 8:5½ / 7:5½ / 11:5½.

Legs: Short. Femora enlarged towards the second third. Tibiae relatively thin. Pro- and mesotibiae slightly bent, metatibiae clearly bent. Lengths of protarsomeres 1–5 as 2:2:2:2:9, lengths of mesotarsomeres 1–5 as 6:4:2:2:9, lengths of metatarsomeres 1–4 as 21:7:3:8.

Amarygmus botryitidis **n. sp.**
(Fig. 8A–E)

Holotype (♀): Kinabalu Park, 6°5'N 116°33'E, Lowland mixed Dipterocarp Forest, *B. scortechinii*, 22.III.1998, A. Floren (CFL).

Paratype: Kinabalupark PHS, *Aporusa lagenocarpa*, Lower Montane, Mixed dipterocarp, DOPAN, 26.II.1996, A. Floren (1 ♀ ZSMB).

Etymology

Botryitis (genitive botryitidis) = name of a precious stone in the "Naturalis historia" of Plinius senior. It is unknown which precious stone was meant.

Diagnosis

Small, oval, markedly convex. Elytra short, highly convex, with rows of medium-sized, widely separated punctures and flat intervals. Frons relatively narrow. Antennae of medium length. Upperside brilliant, pronotum either violet or blue, elytra greenish blue, legs brown.

With respect to body shape, form of legs, width of frons, and shape of antennae, *Amarygmus botryitidis* n. sp. belongs to the group affine *A. splendidulus* (Fabricius, 1794). Within this group *A. botryitidis* is particularly similar to *A. adelphus* n. sp., which, however, is somewhat larger (body length: 5.65–5.97 mm) and has somewhat longer elytra (length/width of elytra 1.33–1.36) and darker legs.

Another similar species is *A. delicatulus* Bremer, 2010 (Bremer 2010a: 182–184) from the same collection area. The punctures of the elytral rows of *A. delicatulus* are smaller and more widely separated than those of *A. botryitidis*, and pronotum and elytra of *A. delicatulus* are of the same colour (dark blue with colourful reflections).

Concerning body shape, punctation of elytra, and colour of legs, *A. botryitidis* is also close to *A. cyaneicollis* Bremer, 2010 (Bremer 2010a: 178–180) from Sabah. *A. cyaneicollis*, however, has a markedly wider frons, the metatibiae are more bent, the antennae are shorter, the pronotum is sea-blue, and the elytra are dark coppery with

intense colour reflections (in *A. botryitidis* the colour of the pronotum is either violet or intensely blue, and that of the elytra bluish green).

There are two other species which have are similar shape as *A. botryitidis*: *A. votivus* Bremer 2010 (Bremer 2010a: 252–254) from Sabah, and *A. affectus* Bremer, 2010 (Bremer 2010a: 164–166) from Sarawak, but both species have a coppery or reddish brown elytral disc and the lateral parts of the elytra are blue. *A. affectus* is somewhat smaller than *A. botryitidis* (body length 3.97–4.47 mm), has lighter brown legs, and the punctures on the pronotum are larger. *A. votivus* is larger than *A. botryitidis* (body length 5.65–5.98 mm), the fronto-clypeal suture is more deeply incised, and the antennae are somewhat shorter.

Description

Measurements: Body length 4.98+5.10 mm; body width 3.39+3.50 mm. – Ratios: Pronotum: width/length 2.05+2.25; width hind corners/width front corners 1.66+1.80. Elytra: length/width 1.29+1.32; length elytra/length pronotum 3.83+3.83; maximum width elytra/maximum width pronotum 1.44+1.46.

Colouration: Elytra greenish blue, pronotum violet or sea blue, upperside markedly lustrous. Legs brown. Underside dark brown. Antennomeres 1–5 brown, 6–11 black.

Head: Frons relatively narrow, its width narrower than length of antennomere 4 (like 7½ : 9); frons and clypeus situated on about the same level and not separated by a deeply incised or depressed fronto-clypeal suture. Genae narrow, short, moderately raised, anteriorly terminating well behind the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture slightly incised. Clypeus moderately stretched forwards, scarcely convex; clypeus and frons with tiny, not too closely set punctures. Mentum reversely trapezoidal; with flat, lustrous lateral margins, space in between convex transversely, slightly lustrous. Underside of neck with medium-sized, closely set punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Wide, uniformly convex transversely, less convex longitudinally. Widest at base, anteriorly narrowing; straight margins in the posterior half, bent in the anterior half. Hind corners angular, moderately obtuse; front corners rounded. Anterior margin slightly excavated.

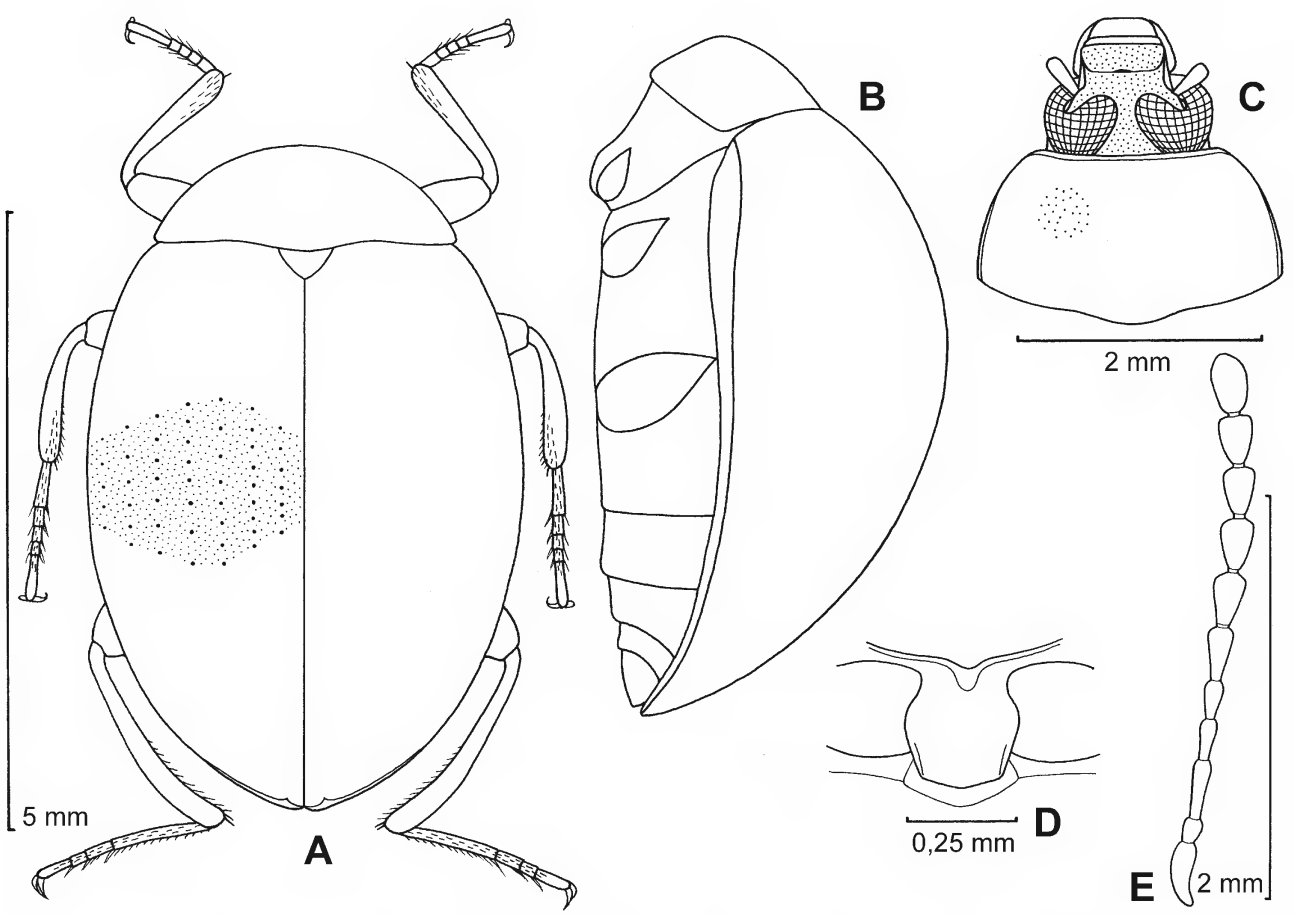

Fig. 8. *Amarygmus botryitidis* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

Lateral and anterior margins bordered. Lateral borders in dorsal view visible in the posterior two-fifths. Front and hind corners in lateral view angular and moderately obtuse. Surface with minute, distinct, not too closely set punctures.

Scutellum: Triangular, with a few tiny punctures.

Elytra: Short, oval, markedly convex transversely and longitudinally. Maximum width and height slightly anterior to the middle. Shoulders barely prominent. Apices of elytra mutually rounded. Lateral edges very narrowly visible on the posterior three-fifths in dorsal view. With rows of medium-sized, widely separated punctures; distance between punctures on disc in row 4 approximately 3–4 times diameter of a puncture; about 22 punctures in row 4. Intervals everywhere flat, with tiny, widely separated punctures.

Prosternum: Anterior margin narrowly bent upwards laterally; in the middle with a relatively wide triangular process which is directed towards apophysis. Apophysis relatively wide, shallow, along procoxae somewhat widened but lateral margins only slightly lifted ventrad, space in between with a wide, shallow median groove; sides posterior to procoxae slightly converging with straight margins; apically broadly pointed.

Mesosternum: Posterior part short, its anterior margin excavated in the middle. Lateral margins with minute tubercles which border the smooth, somewhat depressed middle.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Anterior part of disc with small, not too closely set punctures, posterior part with minute, relatively closely set punctures. Median line neither depressed nor incised.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, with a wide border. Anterior part of sternite 1 covered with small, closely set punctures; posterior part of sternite 1 and subsequent sternites with widely separated, minute punctures.

Antennae: Of medium length, reaching to anterior third of elytra. Length/width ratio of antennomeres 1–11 equals to 15:7 / 6:5 / 14:4 / 9:4 / 9:4 / 12:6½ / 13:7 / 13:8 / 13:8 / 13:8 / 15:8.

Legs: Short, tender. Femora somewhat thickened towards the second third. Protibiae straight, very slightly concave on outer side. Mesotibiae slightly bent. Metatibiae nearly straight in basal half, clearly bent apically. Lengths of protarsomeres 1–5 as 5:5:4:4:16, lengths of mesotarsomeres 1–5 as 18:8:6:4:17, lengths of metatarsomeres 1–4 as 33:12:6:17.

Amarygmus coruscus **n. sp.**
(Fig. 9A–E)

Holotype (♀): Kuching, I.11 [1911] (BMNH).

Paratype: Sarawak, Kapit dist., Rumah Ugap vill., Sut River, 3.–9.III.1994, J. Horák leg. [right antenna, right middle leg, left and right metatibiae and antennomeres missing] (1 ♀ ZSMB).

Etymology

Coruscus (Lat.) = glimmer.

Diagnosis

Of medium size, ovate, markedly convex, *Chrysomela*-like. Elytra with rows of large, rhombic punctures. Intervals flat. Upperside greenish blue, lustrous, legs and antennae dark brown to black.

Similar species with an ovate shape and elytral rows with rhombic punctures are *A. voluptabilis* Bremer, 2006 (Bremer 2006a: 30–33) from Sabah, *A. vanus* Bremer, 2010 (Bremer 2010b: 59–60) from Peninsular Malaysia and Sabah, and *A. rudis* Bremer, 2010 (Bremer 2010b: 54–55) from Peninsular Malaysia:

A. voluptabilis is smaller than *A. coruscus* (body length 5.57–5.81 mm), the punctures of the elytral rows are markedly smaller, the elytra are longer (length/width ratio 1.42–1.46), the metatibiae are more strongly bent, the frons is wider, and the fronto-clypeal suture is much more depressed and incised.

A. vanus is as large as *A. coruscus*, but *A. vanus* has a different colouration of the upperside (blue pronotum, blue lateral elytral intervals and pink elytral disc) and the punctures of the elytral intervals are larger.

A. rudis has a similar shape and width of frons and similar legs as *A. coruscus*, but is larger (body length 7.80 mm), the upperside is darker green coloured, and the elytra are somewhat longer (length/width ratio 1.50).

There is another species with similar size and rhombic punctures on Borneo, *A. muluensis* Bremer, 2010 (Bremer 2010a: 206–208). However, the elytral punctures of *A. muluensis* are situated in striae, and the elytra are definitely more elongate (length/width ratio 1.55).

Description

Measurements: Body length 6.77+7.00 mm; body width 4.21+4.38 mm. – Ratios: Pronotum: width/length 2.13+2.15; width hind corners/width front corners 1.84+1.95. Elytra: length/width 1.35+1.40; length elytra/length pronotum 3.89+4.02; maximum width elytra/maximum width pronotum 1.31+1.38.

Colouration: Elytra bluish green, with intense glimmer. Pronotum green, very lustrous. Frons green, clypeus and genae dark brown. Antennomeres 1–3 dark brown, 4–11 black. Legs black. Underside black, somewhat lustrous.

Head: Frons of medium width, as wide as length of antennomere 4, covered with minute punctures. Genae somewhat raised, anteriorly terminating anterior to the level of the middle part of the fronto-clypeal suture.

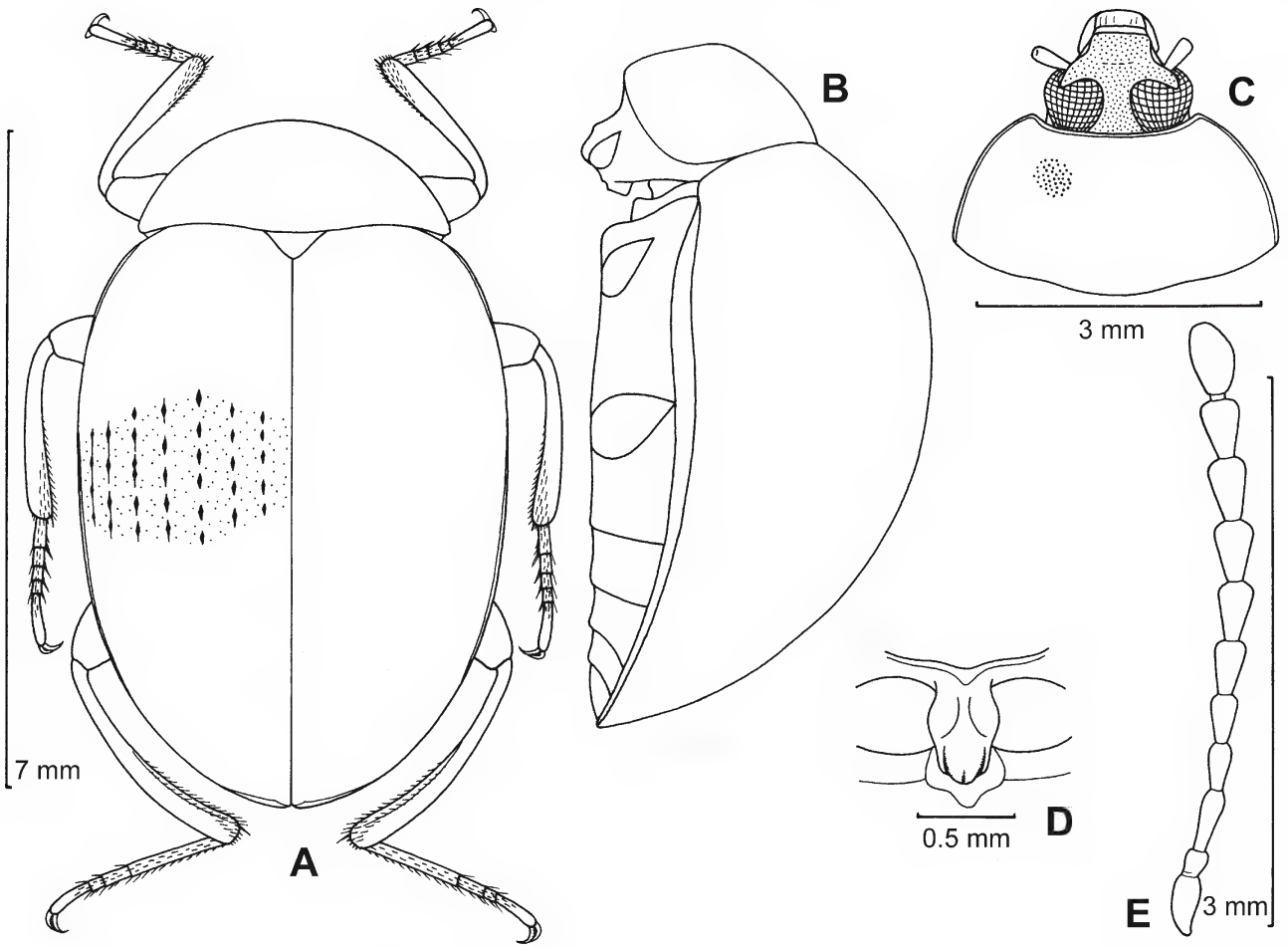

Fig. 9. *Amarygmus coruscus* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

Fronto-clypeal suture slightly incised in its middle part. Clypeus moderately stretched forwards, nearly flat, punctures as on frons. Mentum reversely trapezoidal; lateral margins flat, lustrous, space in between less lustrous and convex transversely. Mandibles sulcated on outer surface, apically bifid.

P r o n o t u m : Wide, moderately convex transversely, slightly less convex longitudinally. Widest at base, narrowing towards front corners and bent. Hind corners angular, obtuse; front corners somewhat protruded due to the excavated anterior margin, rounded. Lateral and anterior margins continuously bordered. Lateral borders in dorsal view narrowly visible. Front and hind corners in lateral view angular, obtuse. Surface with small, distinct, relatively closely set punctures.

S c u t e l l u m : Triangular, with a few tiny punctures.

E l y t r a : Oval, slightly elongate, markedly convex transversely, moderately convex longitudinally. Maximum height and width at about midlength. Shoulders slightly prominent. Apices of elytra mutually rounded. Lateral edges narrowly visible on the whole length in dorsal view. With rows of large, rhombic punctures of variable size and distance; about 22 punctures in row 4. Intervals flat, with tiny, indistinct punctures situated in some distance to each other (as shown in Fig. 9A).

P r o s t e r n u m : Anterior margin narrowly bent upwards, with a short, triangular process towards apophysis at midlength. Apophysis markedly widened along procoxae, lateral margins widened and lifted ventrad, space in between with a deep median groove; posterior to procoxae somewhat descending, with straight, uplifted margins, space in between excavated with uneven surface; apically rounded.

M e s o s t e r n u m : Anterior margin of the posterior part excavated in the middle.

M e t a s t e r n u m : Anterior margin between mesocoxae rounded, bordered. Disc striolated on anterior fourth and with indistinct, small punctures, posterior part with minute, widely separated punctures. Median line somewhat incised.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Sternites 1+2 striolated; all sternites with tiny punctures which are somewhat closer set on sternite 5.

Antennae: Of medium length, reaching to anterior third of elytra. Length/width ratio of antennomeres 1–11 equals to 14:7½ / 8:6 / 16:6½ / 12:7 / 13:7 / 14:9 / 16:11 / 16:11½ / 16:11½ / 16:11½ / 19:11½.

Legs: Short. Femora markedly thickened towards the second third. Protibiae straight, somewhat thickened apically. Mesotibiae slightly bent in the basal two-fifths, straight in the apical three-fifths. Metatibiae moderately bent. Lengths of protarsomeres 1–5 as 9:7:6:6:24, lengths of mesotarsomeres 1–5 as 14:10:7:5:25, lengths of metatarsomeres 1–4 as 22:7:5:12.

Amarygmus danumensis **n. sp.**
(Fig. 10A–H)

Holotype (♂): Borneo, Sabah, Danum Valley [primary lowland rainforest], 4°58'N 117°48'E, M. D. F. Ellwood, *Parashorea tomentella*, *Asplenium nidus*, Tembaling 2, FogTray 2, 19.X.1999 (BMNH).

Paratypes: Same data as holotype (1 sex not determined BMNH). – Same data as holotype, but Tembaling 2, FogTray 26, 450 (1 ♀ ZSMB). – Same data as holotype, but Tembaling 1, FogTray 1, 14.X.1999 (1 ♀ BMNH). – Same data as holotype, but 4 Week Can. 1, 4 Fog., 11.IV.2000 (1 ♀ BMNH). – Mt. Trus Madi, 1300 m, Sabah, Borneo, 9.–10.IV.1994, N. Kanie leg. (1 ♂ CA). – Kinabalu NP, 6°02'90.2"N 116°41'95.3"E, Mv PW, *A. lagneocarpa* 10 F1, 29.III.1997, A. Floren (1 ♀ CFL). – Near Keningau, N Borneo, 30.VI.1989 (1 ♂ ZSMB). – Keningau, Sabah, N Borneo, 31.V.1992, M. Ito leg. (1 ♀ CM). – Sarawak, Gunung Mulu Nat. Park, R. G. S. Expedition 1977–8, Site 2, January, Camp 4, Mulu 1790, 453463, lower montane (moss) forest, Acl-understorey, J. D. Holloway et al., B. M. 1978-206 (1 ♀ BMNH).

Notes: All specimens from Danum Valley are highly rigid. Except the holotype, all specimens from this locality had been damaged by the mounting process. Because of this rigidity a preparation of the aedeagus of the holotype was not performed; the assumption that this specimen is a male was inferred from the antennae, which are somewhat longer than in the females, and the slight posteromedial impression on sternite 5.

Etymology

Danumensis, derived from Danum, the name of the valley where several specimens of the new species had been collected.

Diagnosis

Of medium size, markedly oval, moderately convex transversely and longitudinally. Elytra with rows of medium-sized punctures which are partially connected by faint lines; elytral intervals on disc flat. Upperside greenish or dark purple (see also chapter colouration below). Pronotum with rounded front corners. Frons of medium width, of equal width in both sexes. Antennae of medium length, in males longer than in females. Male protarsomeres 1–3 not widened.

Amarygmus danumensis n. sp. is very similar to *A. medius* Bremer, 2010 (Bremer 2010a: 204–206) from the same locality. *A. medius*, however, has a black to dark coppery upperside (not greenish or dark purple as in *A. danumensis*), the elytra more convex transversely, and pronotum and frons narrower.

Description

Measurements: Body length 5.37–5.97 mm; body width 3.44–3.70 mm. – Ratios: Pronotum: width/length 1.78–2.07; width hind corners/width front corners 1.73–1.80. Elytra: length/width 1.28–1.31; length elytra/length pronotum 3.39–3.67; maximum width elytra/maximum width pronotum 1.40–1.45.

Colouration: Pronotum filthy green or greenish golden. Elytra green or, in anterior view, dark purple, in most specimens colour of the pronotum encroaching onto elytral shoulders (visible in anterior view). Upperside slightly lustrous. Femora and tibiae black, tarsi brown. Antennomeres 1–4 dark brown, 5–11 black. Underside black.

Head: Frons and clypeus on the same level. Frons of medium width, in males narrower than length of antennomere 4 (as 8:12), with tiny, not very closely set punctures. Genae narrow, slightly raised, anteriorly terminating approximately at the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture incised only in its middle part. Clypeus stretched forwards, sides somewhat rounded, with tiny punctures; short, tender, recumbent hairs originating from these punctures. Mentum reversely trapezoidal, with somewhat bent sides; lateral margins flat, lustrous, space in between slightly convex transversely, somewhat opaque. Underside of neck with small, closely set punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Moderately wide and convex transversely, slightly convex longitudinally. Widest at base, anteriorly narrowing and bent. Hind corners angular, obtuse; front corners rounded and slightly stretched forwards. Anterior margin excavated. Lateral and anterior margins bordered. Lateral borders in dorsal view visible on the whole length. Front and hind corners in lateral view obtuse, front corners rounded, hind corners angular. Surface with small, irregularly set punctures.

Scutellum: Triangular, impunctate, sides slightly bent.

Elytra: Ovate, slightly convex transversely and longitudinally. Maximum width and height somewhat anterior to the middle. Shoulders rounded. Apices of elytra mutually rounded. Lateral edges narrowly visible on the whole length in dorsal view. With rows of distinct, medium-sized punctures which are partially linked by faint lines; distance between punctures on disc about equal to

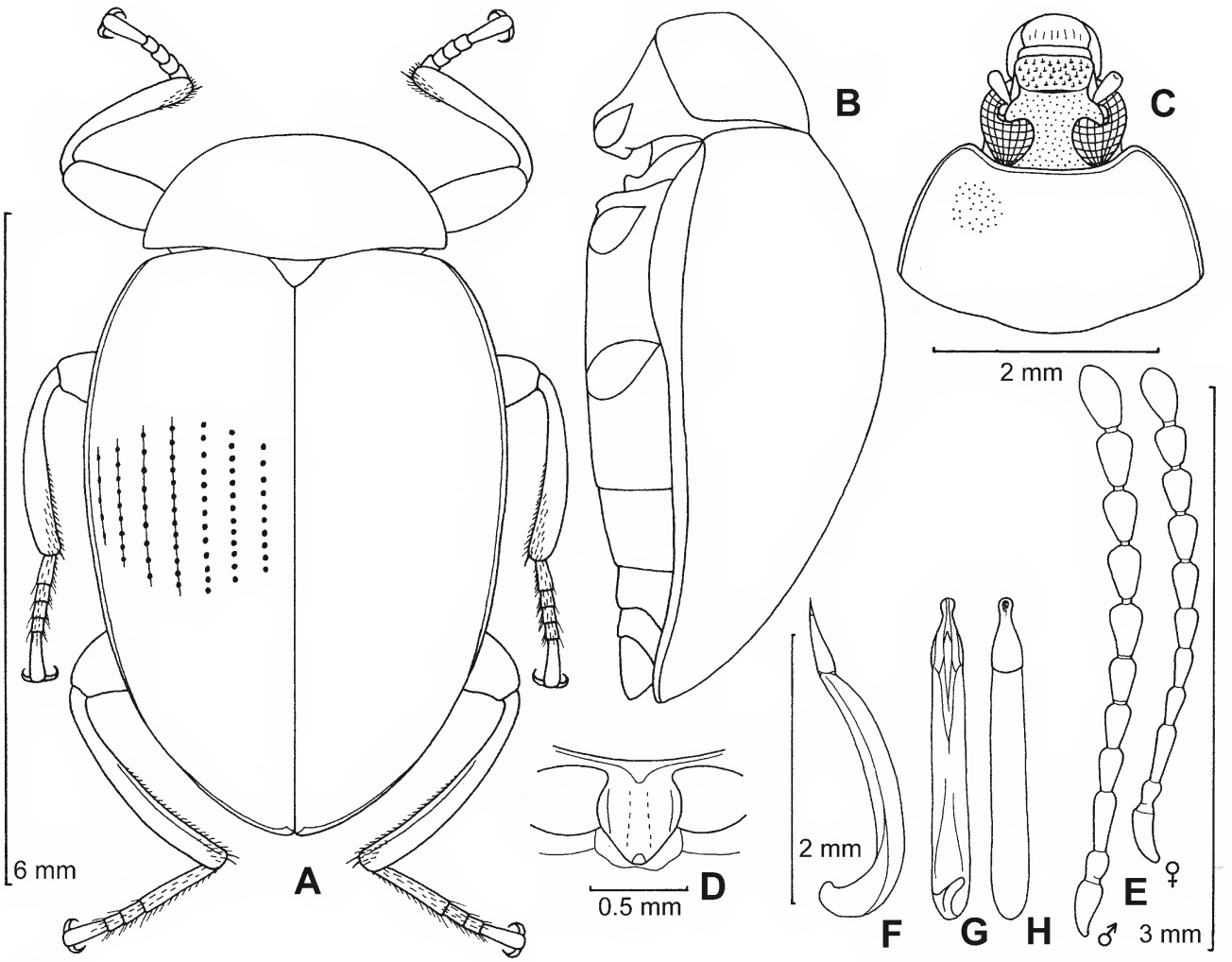

Fig.10. *Amarygmus danumensis* n. sp. – **A** Habitus, ♂. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antennae ♂ and ♀. **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

diameter of a puncture; about 34 punctures in row 4. Intervals flat on disc, slightly convex laterally, with indistinct, tiny, sparse punctures.

Prosternum: Anterior margin narrowly bent upwards, in the middle interrupted by a short keel which is directed towards apophysis. Apophysis laterally rounded and lateral margins slightly raised, space in between like a shallow trough; apically broadly pointed.

Mesosternum: Posterior part wide, its anterior margin excavated in the middle. With a few short, recumbent hairs.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Anterior apophysis slightly raised like a hump, its lateral parts with coarse punctures. Anterior part of disc with a few large punctures, posterior part with closely set, tiny punctures and with tiny, recumbent hairs. Median line neither incised nor depressed.

Sternites: Anterior margin of sternite 1 between metacoxae widely ogival, narrowly bordered. Sternites with tiny, not very closely set punctures and tiny, recumbent hairs.

Antennae: Reaching to about anterior two-fifths of elytra in males, to about anterior third in females. Length/width ratio of antennomeres 1–11 in male equals to 14:8 / 7:6 / 15:6 / 12:6 / 13:6 / 12:7 / 14:8 / 15:9 / 15:9 / 14:9½ / 20:9½, in female to 15:7 / 7:5 / 15:5 / 9½:5 / 10½:5 / 10:6 / 12:7½ / 12:7½ / 12:8 / 12:8½ / 16:9.

Legs: Short. Femora markedly thickened towards the second third. Protibiae thickened apically and slightly bent; meso- and metatibiae thickened apically and bent. Lengths of protarsomeres 1–5 as 6:6:5:5:21, lengths of mesotarsomeres 1–5 as 12:8:8:6:21, lengths of metatarsomeres 1–4 as 24:9:8:21.

Aedeagus: See Fig. 10F–H.

Amarygmus dispensatus **n. sp.**
(Fig. 11A–F)

Holotype (sex not determined, probably ♂): N Borneo, Bettotan nr. Sandakan, 16.VIII.1927, Ex. F. M. S. Museum, B. M. 1955-354 (BMNH).

Note: No preparation of the genitalia was performed because of the rigidity of the specimen.

Etymology

Dispensatus (Lat.) = dispense.

Diagnosis

Small, ovate. Elytra strongly convex transversely, with rows of medium-sized, closely set, distinct punctures which are connected by very faint lines; intervals flat, with minute punctures. Pronotum relatively flat. Frons of medium width. Antennae of medium length. Elytra, pronotum and frons dark blue, contrasting with the reddish brown legs.

Concerning body shape and colour of upperside and legs, *Amarygmus dispensatus* n. sp. is very close to *A. michaeli* Bremer, 2004 (Bremer 2004b: 138–139) from Sabah, but *A. michaeli* has a clearly wider frons and the colour of the upperside has a distinctly violet tinge.

Another similar species is *A. distinguens* n. sp. from Sarawak; see diagnosis under this species.

Description

Measurements: Body length 6.05 mm; body width 3.34 mm. – Ratios: Pronotum: width/length 1.91; width hind corners/width front corners 1.81. Elytra: length/width 1.45; length elytra/length pronotum 3.59; maximum width elytra/maximum width pronotum 1.29.

Colouration: Elytra dark blue, scarcely lustrous; pronotum dark blue with a slight violet tinge; frons blue; clypeus and genae black. Underside brown (darker brown than femora), lustrous. Legs light to reddish brown. Antennomeres 1–5 light brown, 6 dark brown, 7–11 black.

Head: Frons of medium width, somewhat narrower than length of antennomere 3 (like 13 : 15), with a few minute punctures. Genae anteriorly terminating approximately at the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture arched, distinctly incised

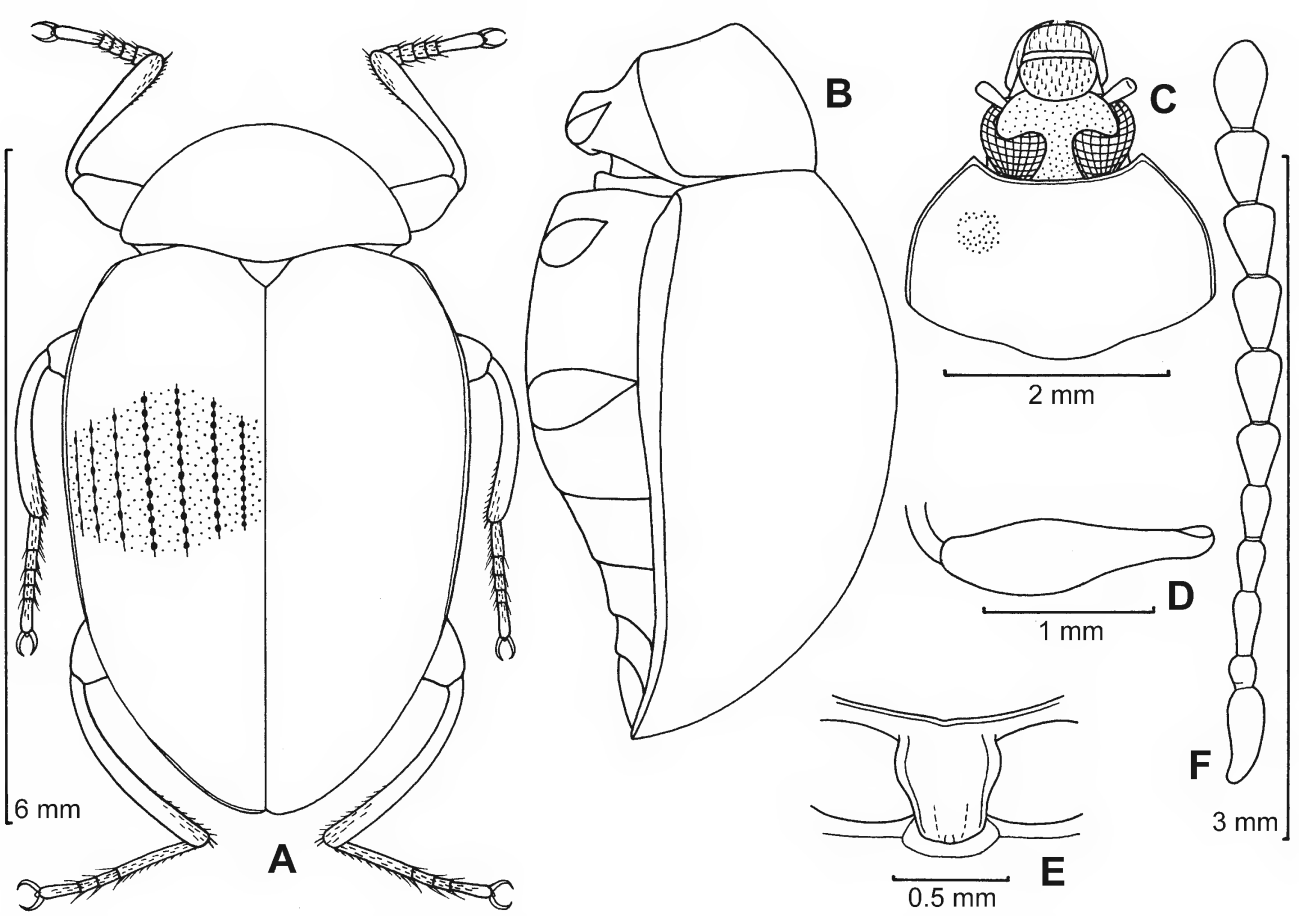

Fig. 11. *Amarygmus dispensatus* n. sp. – **A** Habitus. **B** Body, lateral view. **C** Head and pronotum. **D** Profemur. **E** Prosternal apophysis. **F** Antenna.

across the whole width of the head. Clypeus moderately stretched forwards, slightly convex transversely and longitudinally, with punctures somewhat larger and closer set than those on frons. Mentum widening anteriorly, with bent, flat margins and with a rounded transition between lateral and basal margins. Mandibles sulcated on outer surface, apically bifid.

Pronotum: Moderately convex transversely, slightly convex longitudinally. Widest at base; sides subparallel in the posterior two-fifths, narrowing towards front angles with straight margins in the anterior two-fifths. Hind corners angular, very obtuse; front corners acute-angled. Anterior margin excavated. Lateral and anterior margins bordered. Lateral borders in dorsal view narrowly visible. Front corners in lateral view rectangular; hind corners rounded and very obtuse. Surface with small, distinct, relatively closely and irregularly set punctures.

Scutellum: Triangular, with a few tiny punctures.

Elytra: Ovate. Maximum width and height at the end of the first third. Shoulders rounded. Apices of elytra mutually rounded. Lateral edges narrowly visible in dorsal view. With rows of medium-sized, distinct, partially polygon-shaped punctures which are connected by very faint lines; distance between punctures on disc in row 4 about equal to the diameter of a puncture; about 34 punctures in row 4. Intervals flat, with minute, distinct, not very closely set punctures.

Prosternum: Anterior margin continuously bent upwards, not retracted towards apophysis at midlength. Apophysis relatively large and flat, with a few short, partially semi-erect hairs originating from small punctures; lateral margins along procoxae moderately widened, scarcely raised; sides slightly narrowing posterior to procoxae; apically rounded, with two small tubercles in the middle.

Mesosternum: Posterior part with a shallow longitudinal sulcus on each side medial to lateral margins, anterior margin excavated in the middle.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Anterior apophysis slightly raised like a bump. Disc with minute, distinct, relatively closely set punctures and short, recumbent hairs. Median line slightly incised in the posterior half.

Sternites: Anterior margin of sternite 1 between metacoxae widely ogival, bordered. Discs of sternites with tiny, widely separated punctures and tiny hairs.

Antennae: Of medium length, reaching to anterior third of elytra. Antennomeres 6–11 densely pilose. Length/width ratio of antennomeres 1–11 equals to 15:8 / 7:6½ / 15:6½ / 10:6½ / 12:6½ / 16:8 / 15:8 / 17:8½ / 15:8½ / 14½:8½ / 20:8½.

Legs: Short. Femora with a very thin base, thickened like a club towards the second third. Pro- and mesotibiae slightly bent, metatibiae moderately bent. Lengths of protarsomeres 1–5 as 5:7:4:4:18, lengths of mesotarsomeres 1–5 as 12:7:5:5:20, lengths of metatarsomeres 1–4 as 30:9:7:20.

Amarygmus distinguens **n. sp.**
(Fig. 12A–E)

Holotype (♀): Borneo, Malaysia, Sarawak, Santubong Peninsula, Permai Rainforest Resort [primary lowland rainforest], 10–200 m, at night, on bark of trees, 23.–27.III.2009, R. Grimm (CG).

Paratypes: Malaysia, Borneo, Sarawak, NW Kuching, Matang [primary lowland rainforest], 19.III.2008, at night, on bark of trees, R. Grimm (1 ♀ CG, 1 ♀ ZSMB).

Etymology

Distinguens (Lat.) from distinguo, distinctum = to separate.

Diagnosis

Small, ovate. Elytra with linear punctures which are connected by faint lines; intervals flat, with minute punctures. Frons of medium width. Antenna of medium length. Elytra greenish blue, lustrous, pronotum greenish golden, upperside with a slight iridescence. Femora and tibiae black.

A. distinguens n. sp. is similar to *A. dispensatus* n. sp. from Sabah. However, the upperside of *A. dispensatus* is dark blue, without any iridescence, and the legs are reddish brown (femora and tibiae of *A. distinguens* dark, nearly black), the front corners are sharply angular (rounded in *A. distinguens*), the fronto-clypeal suture is markedly incised and arched (scarcely incised and not arched in *A. distinguens*), and the antennae are stouter.

Another similar species is *A. michaeli* Bremer, 2004, see diagnosis under *A. dispensatus* n. sp.

Description

Measurements: Body length 5.33–5.81 mm; body width 3.34–3.58 mm. – Ratios: Pronotum: width/length 2.20–2.28; width hind corners/width front corners 1.77–1.88. Elytra: length/width 1.28–1.37; length elytra/length pronotum 3.86–4.11; maximum width elytra/maximum width pronotum 1.35–1.39.

Colouration: See diagnosis above. Underside black, lustrous.

Head: Upperside lustrous. Frons of medium width, wider than length of antennomere 3 (like 19 : 16), covered with minute, not too closely set punctures. Genae moderately raised, anteriorly terminating slightly anterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture slightly incised and depressed. Clypeus moderately stretched forwards, moderately convex transversely, with punctures somewhat larger than those on frons and with tiny hairs. Mentum widening anteriorly;

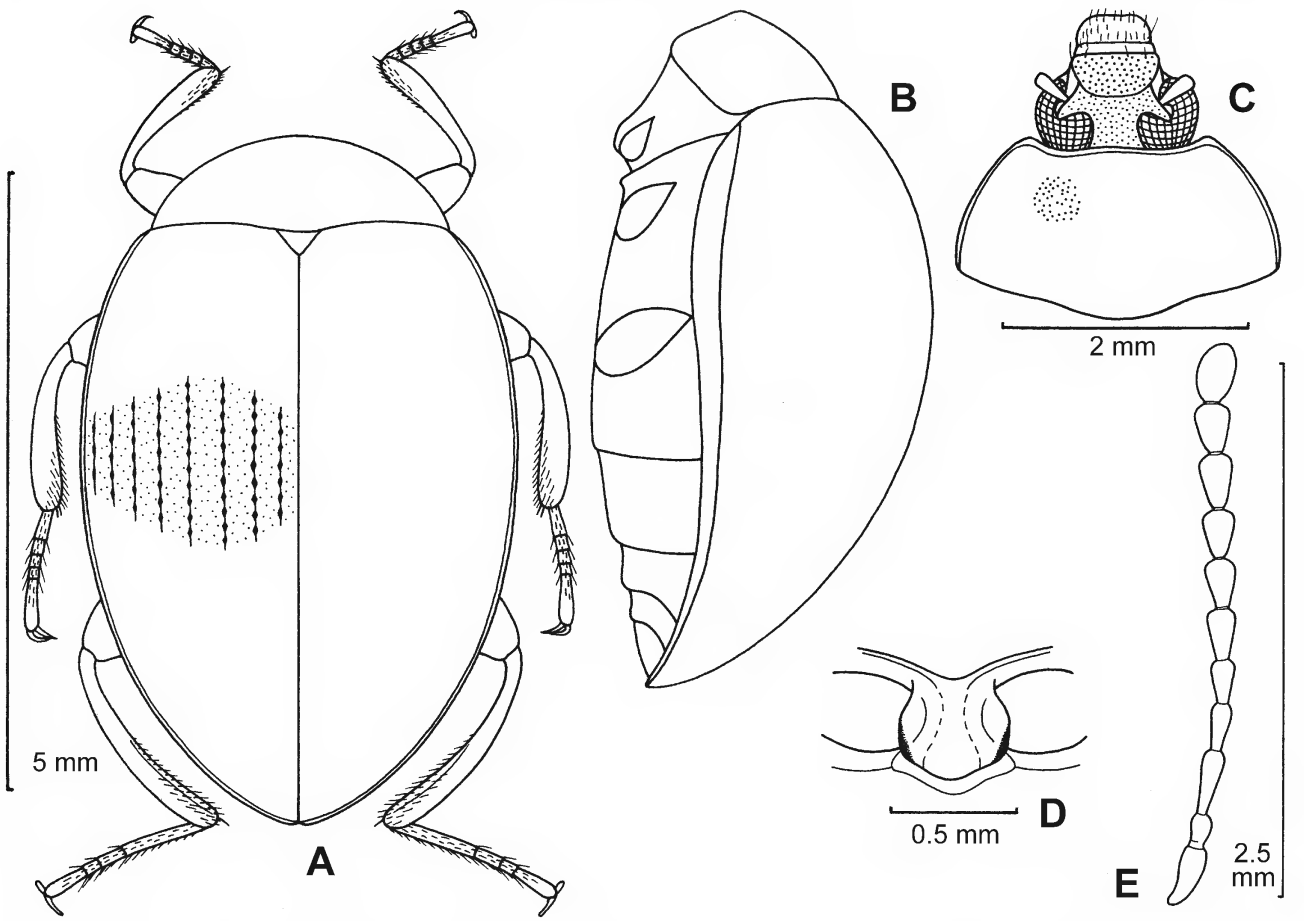

Fig. 12. *Amarygmus distinguens* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

with flat and bent lateral margins and a rounded transition between lateral margins and the basal one, space in between lustrous, convex transversely. Underside of neck with large, closely set punctures. Mandibles sulcated on outer surface, apically bifid.

Pronotum: Convex transversely, moderately convex longitudinally. Widest at base, anteriorly narrowing and bent towards front corners. Front corners rounded in dorsal view; hind corners angular, obtuse. Anterior margin moderately excavated. Lateral and anterior margins bordered. Lateral borders in dorsal view narrowly visible. Front and hind corners in lateral view obtuse, front corners rounded, hind corners angular. Surface with small, not very distinct, relatively closely set punctures.

Scutellum: Triangular, with a few tiny punctures.

Elytra: Ovate, moderately convex transversely, somewhat less convex longitudinally. Maximum width and height at the beginning of the second third. Shoulders slightly prominent. Apices of elytra mutually rounded. Lateral edges, except along shoulders, narrowly visible in dorsal view. With faint striae which connect medium-sized, relatively closely set, mostly round punctures; distance between punctures on disc in stria 4 about ½–1 diameter of a puncture. Intervals flat, with tiny, distinct, not very closely set punctures.

Prosternum: Anterior margin narrowly bent upwards laterally, with a low process towards apophysis at midlength. Apophysis short, shallow, widest somewhat behind procoxae, lateral margins raised along procoxae, space in between with a wide, shallow groove; apex rounded.

Mesosternum: Posterior part wide, short, somewhat opaque, anterior margin excavated in the middle.

Metasternum: Anterior margin between mesocoxae broadly rounded and broadly bordered. Disc arched, anterior part with large, not too closely set punctures, posterior part with a few tiny punctures. Median line slightly incised in its posterior fourth.

Sternites: Anterior margin of sternite 1 between metacoxae widely ogival, bordered. All sternites with tiny, widely separated punctures and tiny hairs.

Antennae: Reaching to anterior third of elytra. Length/width ratio of antennomeres 1–11 equals to 13:5 / 7:4½ / 16:4½ / 10:4½ / 11:5 / 11:6 / 13:7 / 13:8 / 14:8 / 13:8 / 16:9.

Legs: Short. Femora thickened towards the second third. Protibiae slightly bent. Mesotibiae moderately bent. Metatibiae somewhat more bent than mesotibiae. Lengths of protarsomeres 1–5 as 4:4:4:4:15, lengths of mesotarsomeres 1–5 as 10:6:5:4:17, lengths of metatarsomeres 1–4 as 23:11:6:18.

Amarygmus filiastra **n. sp.**
(Fig. 13A–E)

Holotype (♀): Borneo, Malaysia, Sarawak, Kubah NP, HQ vic. [edge of primary lowland rainforest], 100–300 m, at night, on bark of trees, 27.–28.III.2009, R. Grimm (CG).

Etymology
Filiastra (Lat.) (noun) = stepdaughter.

Diagnosis
Small, narrowly elongate ovate. Elytra with somewhat incised, narrow striae with punctures barely wider than striae; elytral intervals on disc slightly convex, laterally moderately convex, impunctate. Maximum width and height of elytra at the end of the anterior third. Pronotum narrow, markedly convex transversely. Frons of medium width. Antennae relatively short. Protibiae slightly bent; mesotibiae moderately bent; metatibiae straight in basal half, slightly incurved in apical half. Metatarsomere 1 long. Elytra copper coloured with a golden tinge, pronotum greenish blue, legs brown.

The new species *Amarygmus filiastra* belongs to a group of similarly small and elongate species: *A. nepos* Bremer, 2002 (from Malayan Peninsula, Sumatra, and Borneo, see Bremer 2002a: 28–30), *A. filiaster* Bremer, 2010 (from Peninsular Malaysia, see Bremer 2010b: 41–43), and *A. pullus* n. sp. (Sabah), described in this paper:

A. nepos has the elytra with rows of small punctures which are inconstantly connected by faint lines, and the pronotum with the same colouration as the elytra.

A. filiaster has elytral striae and also a uniformly coloured upperside; it differs from *A. filiastra* in the elytral striae with large punctures and the relatively coarse punctation on the elytral intervals.

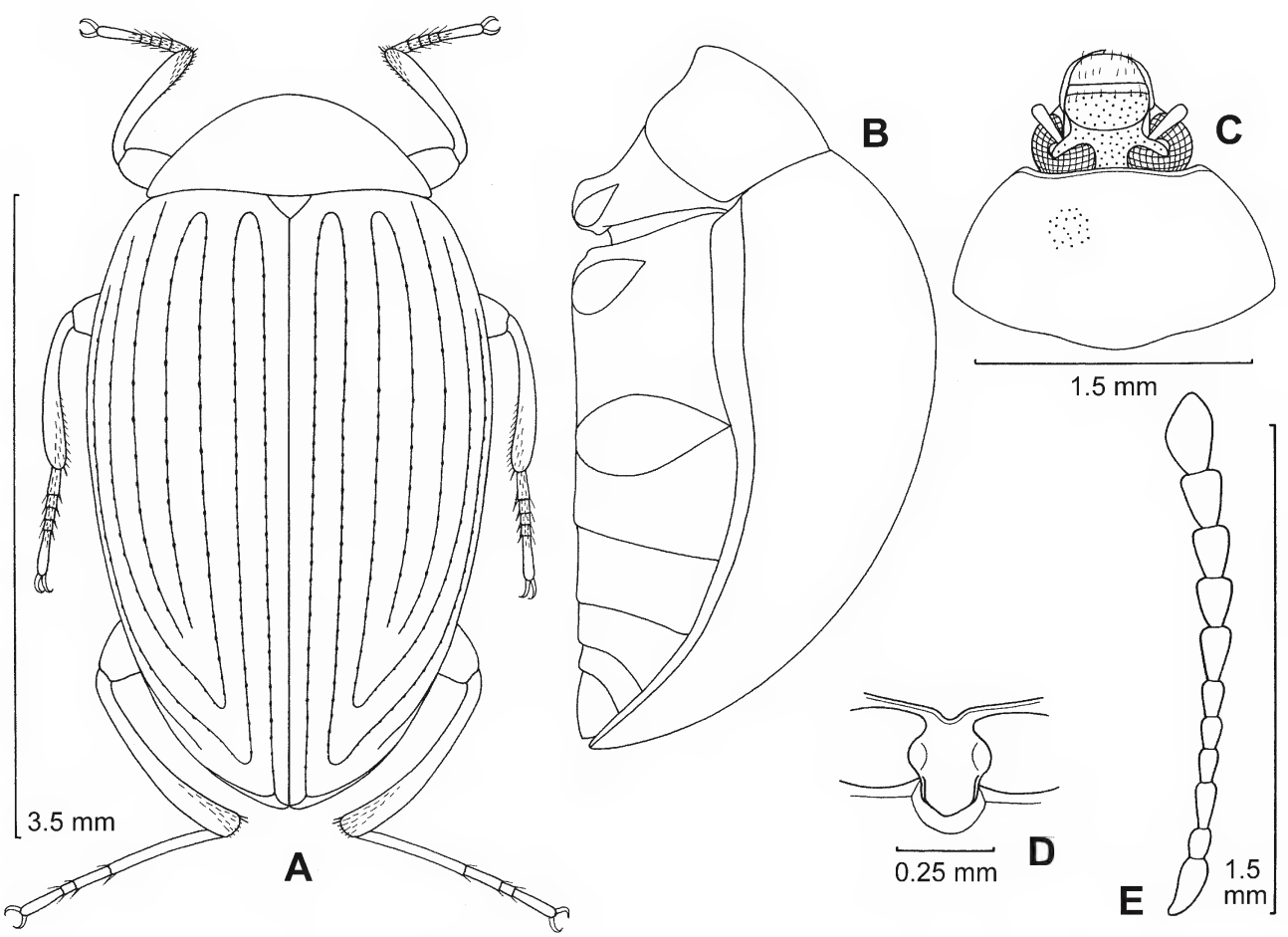

Fig. 13. *Amarygmus filiastra* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna, ♀.

A. pullus has slightly incised, narrow elytral striae with barely visible strial punctures as in *A. filiastra*, but *A. pullus* can easily be distinguished from *A. filiastra* by the greyish brown pronotum, the dark green elytra and the markedly wider frons.

Description

Measurements: Body length 3.79 mm; body width 2.06 mm. – Ratios: Pronotum: width/length 2.00; width hind corners/width front corners 1.71. Elytra: length/width 1.56; length elytra/length pronotum 3.93; maximum width elytra/maximum width pronotum 1.26.

Colouration: Elytra uniformly copper coloured with a golden shine. Pronotum bluish green, lustrous. Frons blue, genae and clypeus black. Underside and legs brown.

Head: Frons of medium width, slightly wider than length of antennomere 3 (like 9 : 8), with minute, not very closely set punctures. Genae slightly raised, anteriorly terminating approximately at the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture arched, distinctly incised. Clypeus moderately stretched forwards, somewhat convex transversely and longitudinally, with minute punctures and short hairs. Mentum reversely trapezoidal; with flat, lustrous lateral margins, space in between opaque and transversely convex. Underside of neck strongly microreticulated, with a few punctures of medium size. Mandibles sulcated on outer surface, apically bifid.

Pronotum: Not very wide, markedly convex transversely, slightly convex longitudinally. Widest at base, anteriorly narrowing with approximately straight margins. Hind and front corners in dorsal view narrowly rounded. Anterior margin nearly straight. Lateral and anterior margins bordered. Lateral borders in dorsal view only visible in the posterior fourth. Front corners in lateral view broadly rounded, obtuse; hind corners narrowly rounded, obtuse. Surface with tiny, indistinct, widely separated punctures.

Scutellum: Triangular, impunctate.

Elytra: Elongate oval, very convex transversely, moderately convex longitudinally. Maximum width and height at the end of the first third. Shoulders rounded, obtuse. Apices of elytra mutually rounded. Lateral edges narrowly visible in the posterior fourth in dorsal view. With well incised striae with elongate punctures which are only noticeable as slight widenings. Intervals on disc very slightly convex, somewhat more convex laterally, punctures tiny (not visible at 50-fold magnification).

Prosternum: Anterior margin narrowly bent upwards, retracted towards apophysis at midlength. Apophysis relatively short, lateral margins along procoxae clearly widened and lifted ventrad like a tubercle, space in between consisting of a deep, wide, microreticulated median groove; descending between procoxae and apex; apically rounded.

Mesosternum: Posterior part short, wide, anterior margin excavated in the middle.

Metasternum: Anterior margin between mesocoxae rounded, broadly bordered. Anterior part of disc with a few medium-sized punctures, posterior part impunctate. Median line narrowly incised.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Sternites impunctate.

Antennae: Short, reaching to anterior fifth of elytra. Length/width ratio of antennomeres 1–11 equals to 11:3 / 6:2½ / 8:2½ / 6:2½ / 6:3 / 6:3 / 8:4½ / 7½:4½ / 7:5 / 7:5 / 11:6.

Legs: Short. Femora moderately thickened towards the second third. For tibiae see diagnosis above. Lengths of protarsomeres 1–5 as 3:2:2:2:12, lengths of mesotarsomeres 1–5 as 6:4½:3:3:12, lengths of metatarsomeres 1–4 as 29:9:4:12.

Amarygmus floreni **n. sp.**
(Fig. 14A–E)

Holotype (♂): Sabah, Poring Spring, *Aporusa* sp., Lower Montain, > 650 m, mixt dipterocarp Fst., Fog.A51/F2, 1.III.1992, A. Floren (CFL).

Paratype: Same data as holotype, but Fog.52/F2, 2.II.1992 (1 ♀ ZSMB).

Note: No preparation of the genitalia was performed because of the high rigidity of the specimens.

Etymology

Dedicated to Priv. Doz. Dr. Andreas Floren (Würzburg), investigator of the canopy fauna of trees in temperate and tropical areas.

Diagnosis

Small, oval. Elytra with puncture rows, flat intervals and a large, reddish brown macula between base and middle of elytra. Pronotum relatively flat, with broadly rounded front corners. Frons wide. Antennae of medium length. Legs reddish brown. Protibiae thickened in the apical half only in the male.

With respect to shape, punctation of elytra, width of frons, widening of male protibiae, and structure of antennae, *Amarygmus floreni* n. sp. is similar to *A. dryadiformis* Bremer, 2002 (Bremer 2002b: 12–13, fig. 6) from the Crocker Mountains. *A. dryadiformis* occurs at a higher altitude, is somewhat smaller (body length 2.97 mm), has two large maculae on each elytron, the widening of the middle part of the male protibiae is more pronounced, and the front corners of the pronotum are angular.

Description

Measurements: Body length 3.27+3.42 mm; body width 1.79+1.83 mm. – Ratios: Pronotum: width/length 2.10+2.21; width hind corners/width front corners

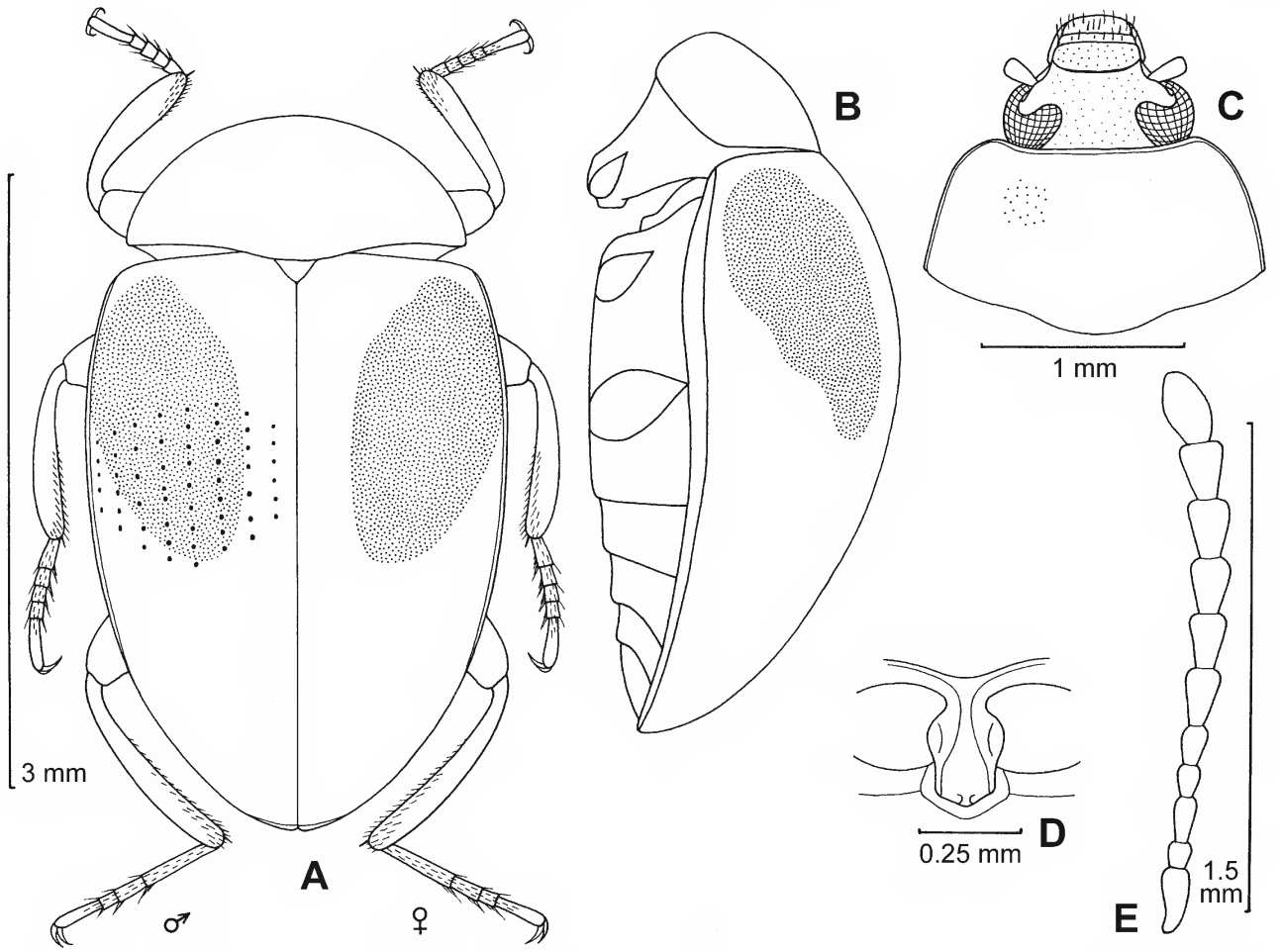

Fig. 14. *Amarygmus floreni* n. sp. – **A** Habitus; legs on left side ♂, right side ♀ (elytra black, densely punctured area reddish brown). **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

1.75+1.75. Elytra: length/width 1.44+1.46; length elytra/length pronotum 3.35+3.57; maximum width elytra/maximum width pronotum 1.10+1.12.

Colouration: Ground colour of elytra black, lustrous; elytral maculae reddish brown. Pronotum black, lustrous. Frons and clypeus black, lustrous; genae brown. Underside lustrous, metasternum brown, sternites dark brown, femora lighter brown than underside. Antennomeres 1–6 brown, 7–11 black (apical half of antennomere 11 brightened).

Head: Upperside flat. Frons wide, wider than combined length of antennomeres 3+4 (like 16½ : 13), with very tiny punctures and widely separated hairs. Genae barely raised, anteriorly terminating approximately at the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture arched, slightly incised. Clypeus slightly stretched forwards, punctured and pilose as on frons. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Short, convex transversely, less convex longitudinally. Widest at base, anteriorly narrowing, posterior three-fifths with straight margins. Front corners in dorsal view broadly rounded; hind corners sharply angular and slightly obtuse. Anterior margin nearly straight. Lateral and anterior margins bordered. Lateral borders in dorsal view narrowly visible. Front and hind corners in lateral view slightly obtuse, front corners narrowly rounded, hind corners sharply angular. Surface with indistinct, very tiny punctures.

Scutellum: Triangular, impunctate.

Elytra: Oval, moderately convex transversely and longitudinally. Maximum width and height at the end of the first third. With rows of small to medium-sized punctures; distances between punctures on disc in row 4 about 2–3 times diameter of a puncture; about 22 punctures in row 4. Intervals flat, impunctate.

Prosternum: Anterior margin narrowly bent upwards, slightly retracted towards apophysis in the middle.

Apophysis not very wide; along procoxae slightly widened and lateral margins raised ventrad, space in between with a median groove; posterior to procoxae lateral margins subparallel and narrowly lifted upwards; apically broadly pointed and with a median nose-like elevation.

Mesosternum: Anterior margin of the posterior part excavated in the middle, this excavation extending to the posterior margin. Lateral margins raised.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Anterior part of disc with small, not very closely set punctures, posterior part with minute punctures; punctures with short hairs. Median line neither depressed nor incised.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, narrowly bordered. Sternites with minute punctures and hairs.

Antennae: Of medium length, reaching to anterior third of elytra. Length/width ratio of antennomeres 1–11 equals to 8:4 / 4½:4 / 8:3½ / 5:4 / 5:4 / 8:6 / 9:6 / 8½:6½ / 8:7 / 8:7 / 13:7.

Legs: Short. Profemora markedly thickened towards the second third. Protibiae bent, thickened in their apical half in the male, relatively wide also in the female, but not markedly thickened in the apical half; mesotibiae slightly bent, not thickened; metatibiae moderately bent. Male protarsomeres 1–3 slightly widened. Lengths of protarsomeres 1–5 as 3:3:3:2½:11, lengths of mesotarsomeres 1–5 as 6:4:4:3½:11, lengths of metatarsomeres 1–4 as 14:7:4:11.

Amarygmus gilvicornis **n. sp.**
(Fig. 15A–E)

Holotype (♂): Sabah, Batu Punggul Resort [primary lowland rainforest], 24.VI.–1.VII.1996, leg. J. Kodada (SMNS).

Paratypes: Same data as holotype (1 ♂ ZSMB, 1 ♀ SMNS).

Etymology

Gilvus (Lat.) = yellow; cornis, from cornu (Lat.) horn (in insects also used for antennae).

Diagnosis

Small, slightly elongate, markedly convex. Upperside distinctly lustrous, golden brown with a clear reddish tinge. Antennae of medium length, with antennomere 11 uniformly yellow. Elytra with rows of widely separated, indistinct, small punctures. Antennae in males slightly longer than in females. Protarsomeres 1–3 not widened in males, but protarsomeres 1–4 with brush-like hairs on soles.

A similar species is *A. praestans* Bremer, 2002 (Bremer 2002a: 32–33) which also has a uniformly yellow antennomere 11. *A. praestans*, however, is larger (body length 4.14–4.69 mm), the elytra have a more bluish instead of a clear reddish tinge, the frons is somewhat wider and the pronotum somewhat narrower.

Description

Measurements: Body length 3.57–4.00 mm; body width 2.26–2.45 mm. – Ratios: Pronotum: width/length 1.83–1.88; width hind corners/width front corners 1.71–1.74. Elytra: length/width 1.35–1.44; length elytra/length pronotum 3.38–3.64; maximum width elytra/maximum width pronotum 1.34–1.38.

Colouration: Elytra golden brown with a clear reddish tinge, pronotum brown. Upperside uniformly lustrous. Underside brown, darker brown than femora. Legs yellowish brown. Antennomeres 1–5 yellowish brown, 6–10 black, 11 yellow.

Head: Frons of medium width, approximately as wide as length of antennomere 3, anteriorly forming a semi-circle like a boundary (but which does not slope into a deep fronto-clypeal sulcus as in *A. clypealis* Bremer, 2010). Genae very short, anteriorly terminating well behind the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture moderately incised over the whole width of the head. Clypeus moderately stretched forwards, slightly convex transversely and longitudinally. Clypeus and frons with small, shallow, not too closely set punctures. Mentum widening anteriorly, uniformly lustrous, sides bent, base narrow; lateral margins flat, space in between somewhat convex transversely. Underside of neck lustrous, with microreticulation, impunctate. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Wide, moderately convex transversely and longitudinally. Widest at base, anteriorly somewhat narrowing and bent. Hind corners angular, obtuse; front corners broadly rounded. Anterior margin nearly straight. Lateral and anterior margins continuously bordered. Lateral borders in dorsal view very narrowly visible. Front corners in lateral view broadly rounded, obtuse; hind corners angular, obtuse. Surface with minute, indistinct, not very closely set punctures.

Scutellum: Triangular, impunctate.

Elytra: Oval, markedly convex transversely, somewhat less convex longitudinally. Maximum width and height slightly anterior to the middle. Shoulders slightly prominent. Apices of elytra mutually rounded. Lateral edges not visible in dorsal view. With rows of indistinct, small punctures; distance between punctures on disc 2–3 times diameter of a puncture. Intervals flat, with tiny, widely separated punctures.

Prosternum: Anterior margin continuously and narrowly bent upwards; a short keel originating from the middle part extending towards apophysis. Apophysis narrow, margins along procoxae widened, lateral margins thickened and markedly raised (like a large tubercle), space in between with a deep, median groove; posterior to procoxae somewhat descending, sides subparallel and margins narrowly lifted; apically straight.

Mesosternum: Sides of posterior part narrowing towards base, anterior margin excavated in the middle.

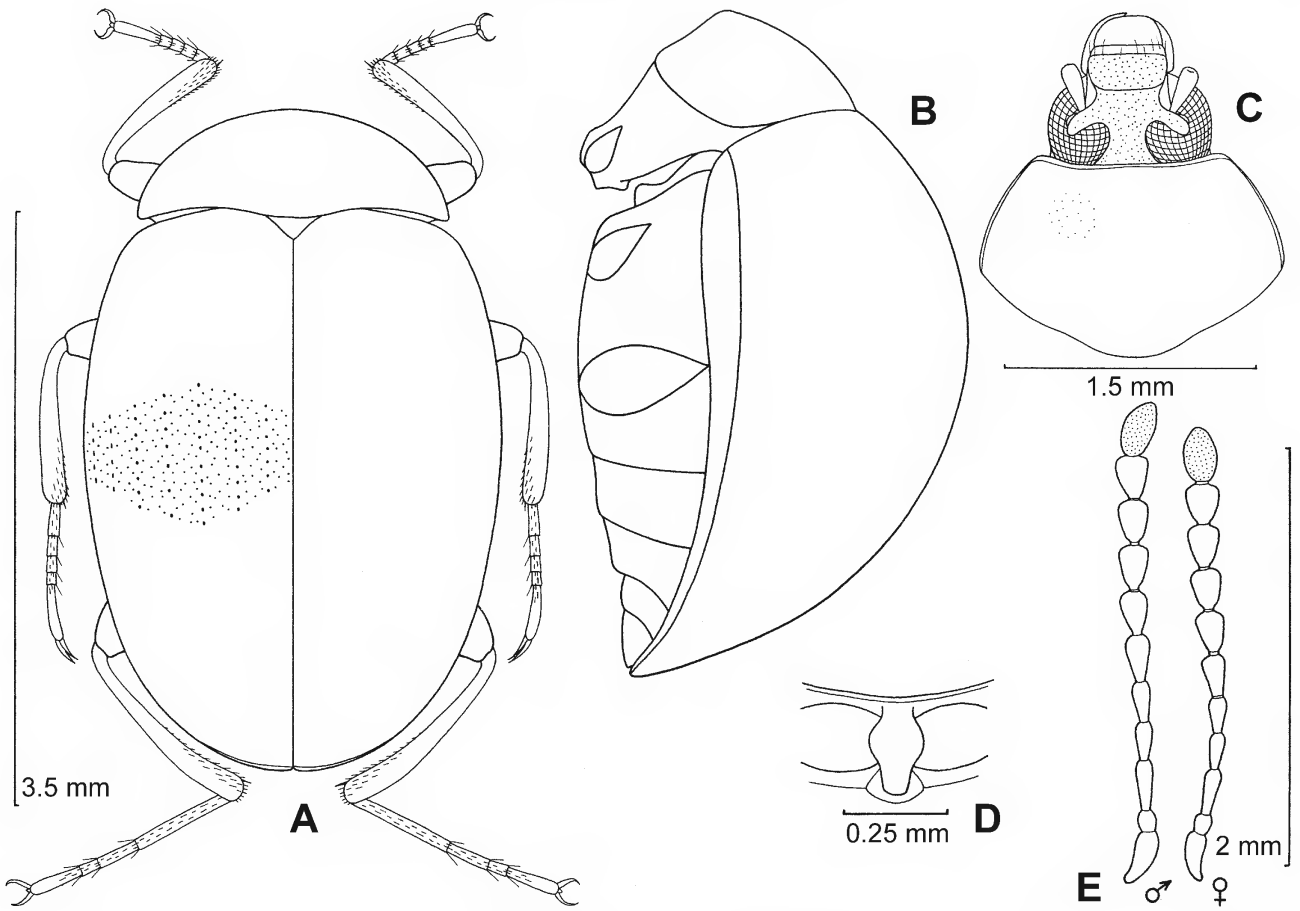

Fig. 15. *Amarygmus gilvicornis* n. sp. – **A** Habitus, ♂. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antennae ♂ and ♀ (punctured antennomere 11 yellow).

Metasternum: Anterior margin between mesocoxae rounded, bordered. Behind anterior margin there are a few small punctures. Disc with tiny, widely separated punctures with relatively long, recumbent hairs. Median line narrowly incised on the whole length.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Apophysis of sternite 1 with small, closely set punctures; remaining part of sternite 1 and sternites 2–5 with tiny, widely separated punctures and tiny, recumbent hairs. Sternite 5 neither excavated nor depressed near posteromedial margin in males.

Antennae: Of medium length, reaching to anterior third of elytra. Length/width ratio of antennomeres 1–11 in male equals to 12:6 / 7:4½ / 12:4 / 7½:4 / 9:4 / 11:6 / 10:7 / 11:8 / 11:8 / 11:8 / 14:8, in female to 12:6 / 6:4½ / 11:4 / 6:4 / 7:4 / 10½:6 / 10:7 / 11:8 / 10:8 / 10:8 / 13:8.

Legs: Short. Femora distinctly thickened towards the second third. Pro- and mesotibiae slightly bent. Metatibiae straight in basal half, somewhat incurved in apical half. Lengths of protarsomeres 1–5 as 4:4:4:4:14, lengths of mesotarsomeres 1–5 as 7:5:4:4:14, lengths of metatarsomeres 1–4 as 28:11:5:14.

Amarygmus gnomus n. sp.
(Fig. 16A–H)

Holotype (♂): Borneo, Sabah, Danum Valley [primary lowland rainforest], 4°58'N 117°48'E, M. D. F. Ellwood, *Parashorea tomentella*, *Asplenium nidus*, Tembaling 1, FogTray 24, 14.X.1999, 394 (BMNH).

Etymology
Gnomus (Lat.) = gnomish.

Diagnosis
Tiny, oval. Elytra with the maximum width at the end of the anterior third, with rows of relatively closely set punctures and flat intervals. Frons wide. Antennae short. Elytra copper coloured, head and pronotum verdigris coloured, legs dark brown. Male protarsomeres 1–3 not

widened, inner apical half of protibiae not widened, sternite 5 without posteromedial depression.

Amarygmus gnomus n. sp. is very similar in size and shape to *A. pygmaeus* Bremer, 2010 (Bremer 2010a: 229–231). However, *A. pygmaeus* has the elytra dark blue, head and pronotum black, legs light brown, and the elytral linear punctation connected by faint lines (not so in *A. gnomus*).

Description

Measurements: Body length 2.72 mm; body width 1.67 mm. – Ratios: Pronotum: width/length 1.83; width hind corners/width front corners 1.52. Elytra: length/width 1.28; length elytra/length pronotum 3.14; maximum width elytra/maximum width pronotum 1.34.

Colouration: Upperside slightly lustrous. Head and pronotum coppery green. Elytra copper coloured. Legs dark brown. Antennomeres 1–3 brown; 4–11 black. Underside brown. Metasternum lustrous. Sternites slightly opaque due to microreticulation.

Head: Frons very wide, as wide as combined length of antennomeres 3–7, flat transversely, slightly convex longitudinally. Eyes asymmetrically projecting laterally. Genae only partially covering the base of antennomere 1, anteriorly terminating clearly anterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture distinctly depressed, incised in its middle part. Clypeus slightly stretched forwards, with small punctures which are not very closely set and with short hairs. Frons with small punctures without hairs. Mentum reversely trapezoidal; lateral margins flat, lustrous, space in between slightly opaque, convex transversely. Underside of neck with some large, shallow punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Not very wide, trapezoidal; uniformly convex transversely, slightly convex longitudinally. Hind corners angular, slightly obtuse; front corners rounded. Anterior margin clearly excavated. Lateral and anterior margins bordered. Lateral borders in dorsal view well visible. Front corners in lateral view narrowly rounded,

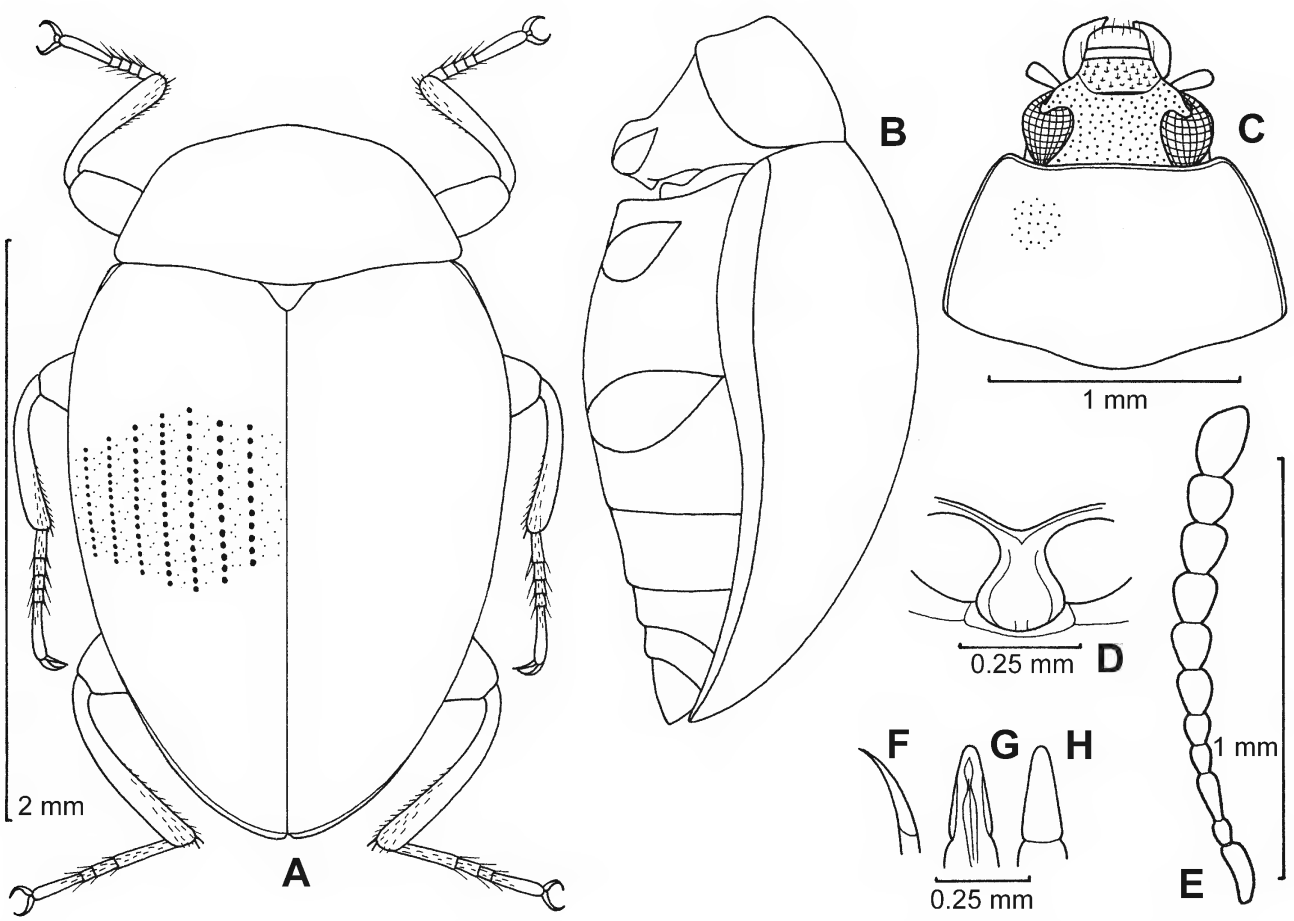

Fig. 16. *Amarygmus gnomus* n. sp. – **A** Habitus, ♂. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna. **F** Apical piece of aedeagus, lateral view. **G** Apical piece of aedeagus, ventral view. **H** Apical piece of aedeagus, dorsal view.

rectangular, hind corners angular, slightly obtuse. Surface with small, not very closely set punctures; tiny hairs, originating from these punctures, visible at 100-fold magnification.

Scutellum: Triangular, with a few tiny punctures.

Elytra: Somewhat elongate oval, markedly convex transversely (convexity strongest at the maximum height and width), clearly convex longitudinally. Maximum width and height at the end of the first third. Shoulders slightly prominent. Apices of elytra mutually rounded. Lateral edges in dorsal view visible at the shoulders and in the posterior half. With rows of small punctures which are closely set and not connected by lines; distance between punctures on disc in row 4 equal to the diameter of a puncture; about 40 punctures in row 4. Intervals flat, with a few tiny, but well recognizable punctures; tiny hairs (visible at 100-fold magnification) originating from these punctures.

Prosternum: Anterior margin narrowly bent upwards, in the middle with a short process directed towards apophysis. Apophysis oval, with the maximum width behind procoxae, in the middle of the apex with a slightly lifted keel.

Mesosternum: Posterior part wide and short, anterior margin excavated in the middle, surface posterior to the excavation flat, lustrous and with a few short hairs. Lateral margins rough due to a mixture of punctures and small tubercles.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Disc with very large punctures and short, inclined hairs on anterior half, very tiny, sparse punctures on posterior half. Median line neither depressed nor incised.

Sternites: Anterior margin of sternite 1 between metacoxae very broadly ogival, bordered. Sternites 1+2 with some medium-sized punctures, sternites 3+4 with smaller punctures, sternite 5 with small, relatively closely set punctures; very short, recumbent hairs originating from all these punctures.

Antennae: Very short, reaching over base of pronotum by only 2 antennomeres. Length/width ratio of antennomeres 1–11 equals to 7:3 / 3:2½ / 4:3 / 3½:3 / 4:3 / 4½:3½ / 5:4 / 5½:4 / 5½:4 / 5½:4 / 9:4½.

Legs: Short. Femora enlarged towards the second third. Pro- and mesotibiae slightly bent; metatibiae clearly bent in basal half, nearly straight in apical half. Lengths of metatarsomeres 1–4 as 14:3½:3:11.

Aedeagus: See Fig. 16F–H.

Amarygmus hongi **n. sp.**
(Fig. 17A–E)

Holotype (♀): Borneo, Sabah, Danum Valley, vic. Rainforest Lodge, 4°58'N 117°48'E, 19.–20.X.2009, U. & H. J. Bremer leg.; primärer Tiefland-Regenwald [= primary lowland rainforest], nachts, auf der Rinde eines Baumes [= at night, on bark of a tree] (ZSMB).

Etymology

Dedicated to George Kok Khiong Hong (Kota Kinabalu, Sabah), acknowledging his logistic support for the collection travels.

Diagnosis

A very characteristic species because of the pattern of maculae. Of medium size, oblong, elytra somewhat oval. Markedly convex transversely, convex longitudinally (maximum width of elytra slightly anterior to the middle). Underside convex transversely. On a yellowish red ground there are black maculae as shown in Fig. 17A. Antennomere 11 yellow, contrasting with the black antennomeres 6–10. Elytra with incised striae with small, elongate, indistinct punctures; elytral intervals convex, also on disc, with closely set, small punctures. Legs slender, relatively long. Antennae long, reaching slightly beyond middle of elytra. [Despite of the fact that males are unknown, male forelegs and antennae are probably longer than those of females.]

The macula pattern on pronotum and elytra of *A. hongi* is very similar to that of *A. elegans* Bremer, 2002 (Fig. 18A–H; Bremer 2002b: 13–14). Both species have a yellow antennomere 11, but the body of *A. hongi* is narrower, the elytral intervals are clearly convex (nearly flat on disc in *A. elegans*), and the maximum height and width of elytra is slightly anterior to the middle (at the end of the anterior third in *A. elegans*).

Description

Measurements: Body length 6.61 mm; body width 3.03 mm. – Ratios: Pronotum: width/length 1.43; width hind corners/width front corners 1.43. Elytra: length/width 1.71; length elytra/length pronotum 3.10; maximum width elytra/maximum width pronotum 1.27.

Colouration: Ground colour of pronotum and elytra yellowish red; basal half of pronotum on each side with a large black macula which is not touching the lateral margin. Elytra with five black maculae, one posterior to the scutellum, two transversely aligned ones at the anterior third, and two more rounded ones at the posterior third. Underside brown. Legs yellowish red. Antennomeres 1–5 light brown, 6–10 black, 11 uniformly yellow.

Head: Frons of medium width, about as wide as length of antennomere 4, with closely set, small punctures. Genae short, slightly raised, less closely punctured than on frons, anteriorly terminating posterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture translucent, slightly depressed. Clypeus relatively short, somewhat convex longitudinally, with closely set punctures which are somewhat larger than those of frons.

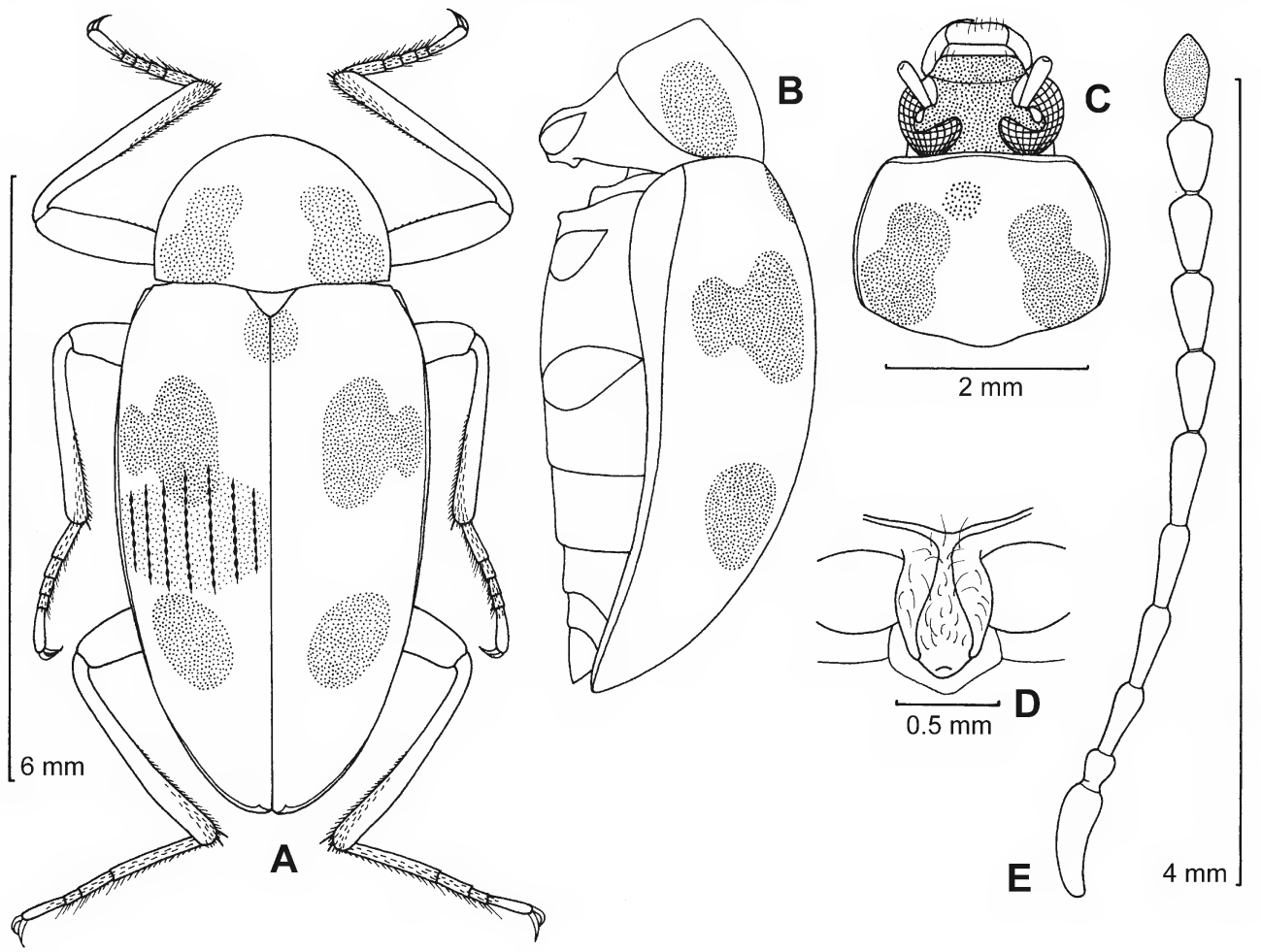

Fig. 17. *Amarygmus hongi* n. sp. – **A** Habitus, ♀ (body yellow, densely punctured areas black). **B** Body, lateral view. **C** Head and pronotum (pronotum yellow, densely punctured areas black). **D** Prosternal apophysis. **E** Antenna (punctured antennomere 11 yellow).

Mentum with bent sides, maximum width approximately in the middle; lateral margins flat, lustrous, space in between slightly convex transversely, somewhat less lustrous. Underside of neck impunctate, but with faint, transverse wrinkles. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

P r o n o t u m : Relatively narrow, convex transversely and longitudinally. Widest shortly posterior to the middle, sides bent. Hind corners rounded; front corners more angular, not protruding and not visible in dorsal view. Anterior margin straight. Lateral and anterior margins continuously and narrowly bordered. Lateral borders in dorsal view narrowly visible in the posterior three-fourths. Front corners in lateral view about rectangular; hind corners obtuse. Surface with small, closely set, indistinct punctures.

S c u t e l l u m : Triangular, impunctate, sides slightly rounded.

E l y t r a : Oblong, slightly oval, markedly convex transversely, convex longitudinally. Maximum width and height slightly anterior to the middle. Shoulders angular, obtuse. Apices of elytra mutually rounded. Lateral edges narrowly visible in dorsal view. With distinctly incised striae with elongate, small punctures. Intervals (also on disc) convex, very closely covered with small punctures.

P r o s t e r n u m : Very short. Anterior margin continuously and narrowly bent upwards, not retracted towards apophysis in the middle. Apophysis narrow, ascending longitudinally towards the level of the procoxae, just posterior to procoxae descending towards the pointed apex; sides along procoxae somewhat widened and raised, space in between with a moderately wide, median groove.

M e s o s t e r n u m : Posterior part narrow, its anterior margin narrowly and deeply excavated. Sides somewhat narrowing posteriorly and raised like a sharp edge. With a few erect hairs of medium length.

M e t a s t e r n u m : Convex transversely. Anterior margin between mesocoxae narrowly rounded, bordered. Anterior part of disc with some indistinct, small punctures,

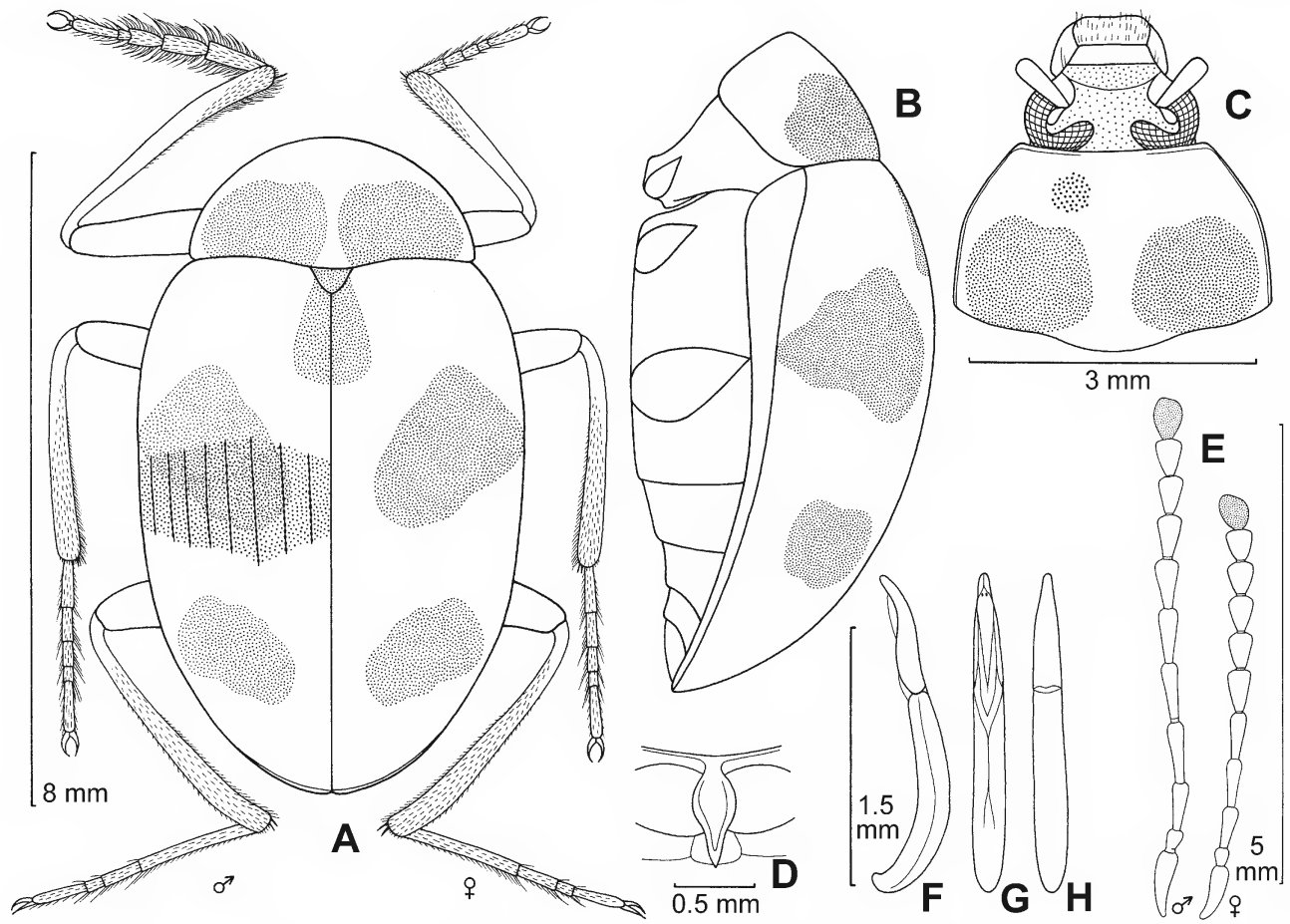

Fig. 18. *Amarygmus elegans* Bremer, 2002. – **A** Habitus; legs on left side ♂, right side ♀ (body yellow, densely punctured areas black). **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antennae ♂ and ♀ (punctured antennomere 11 yellow). **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

posterior part impunctate. Median line depressed in the posterior two-thirds, with not very closely set, partially erect or recumbent hairs of medium length.

Sternites: Anterior margin of sternite 1 between metacoxae narrowly ogival, bordered. Sternites 1+2 with small, indistinct, closely set punctures, sternites 3–5 with very tiny, sparse punctures. Discs of sternites 1+2 in the middle with long, semi-erect, closely set hairs; on sternites 3–5 the hairs are less closely set and shorter (in the female!).

Antennae: Long, reaching to middle of elytra. Length/width ratio of antennomeres 1–11 equals to 24:9 / 10:8 / 17:7 / 20:7½ / 20:7½ / 22:8 / 21:9½ / 20:9½ / 19:10 / 18:10 / 23:11.

Legs: Long, tender. Femora only slightly thickened towards the second third. Pro- and mesotibiae straight; metatibiae straight in the basal half, somewhat thickened and slightly incurved in the apical half and with semi-erect, medium-sized bristles on inner side. Lengths of protarsomeres 1–5 as 13:9:7:6:22, lengths of mesotarsomeres 1–5 as 17:10:8:7:21, lengths of metatarsomeres 1–4 as 45:20:9:22.

Amarygmus inermis **n. sp.**
(Fig. 19A–H)

Holotype (♂): Borneo, Sabah, Tawau Hills Park [collected at night, on bark of a tree in primary lowland rainforest], 21.–22.X.2009, Ulf Bremer leg. (ZSMB).

Etymology

Inermis (Lat.) = unarmed.

Diagnosis

Large. Elytra elongate, markedly convex transversely, with subparallel sides, with rows of small, closely set punctures and flat intervals. Frons of medium width.

Antennae short. Male protarsomeres 1–3 moderately enlarged. Elytra green, without iridescence; pronotum green, with iridescence.

With respect to size, shape of legs and antennae, and colouration, *Amarygmus inermis* n. sp. resembles *A. baluensis* Pic, 1951 (redescribed and illustrated by Bremer 2004a: 14–15, fig. 4) from Sabah. However, *A. baluensis* has moderately bent sides of the elytra, the small punctures of the elytral rows are narrower and may fuse into striae (punctures always separated in *A. inermis*), and the frons is narrower.

The new species also resembles *A. hassalti* Fairmaire, 1882 (known from Sumatra, Malayan Peninsula and Borneo, redescribed and illustrated by Bremer 2003a: 58–61) in size, subparallel sides of elytra, unconnected punctures of elytral rows, width of frons, length of antenna, and shape of aedeagus. Males of *A. hassalti*, however, have a distinct widening on the inner basal half of the mesotibiae, usually with obtuse corner (only a slightly noticeable widening present in *A. inermis*), and the punctures of the elytral rows are larger and more widely separated.

Description

Measurements: Body length 11.1 mm; body width 6.1 mm. – Ratios: Pronotum: width/length 1.80; width hind corners/width front corners 1.91. Elytra: length/width 1.53; length elytra/length pronotum 3.34; maximum width elytra/maximum width pronotum 1.21.

Colouration: Elytra green, without iridescence, lustrous. Ground colour of pronotum green, with a purple iridescence. Frons green, clypeus and genae brown. Underside and legs brown, metasternum lustrous, sternites opaque. Antennomeres 1–5 brown, 6–11 greyish black.

Head: Frons relatively narrow, about as wide as length of antennomere 3, covered with minute, closely set punctures, but leaving an impunctate area posterior

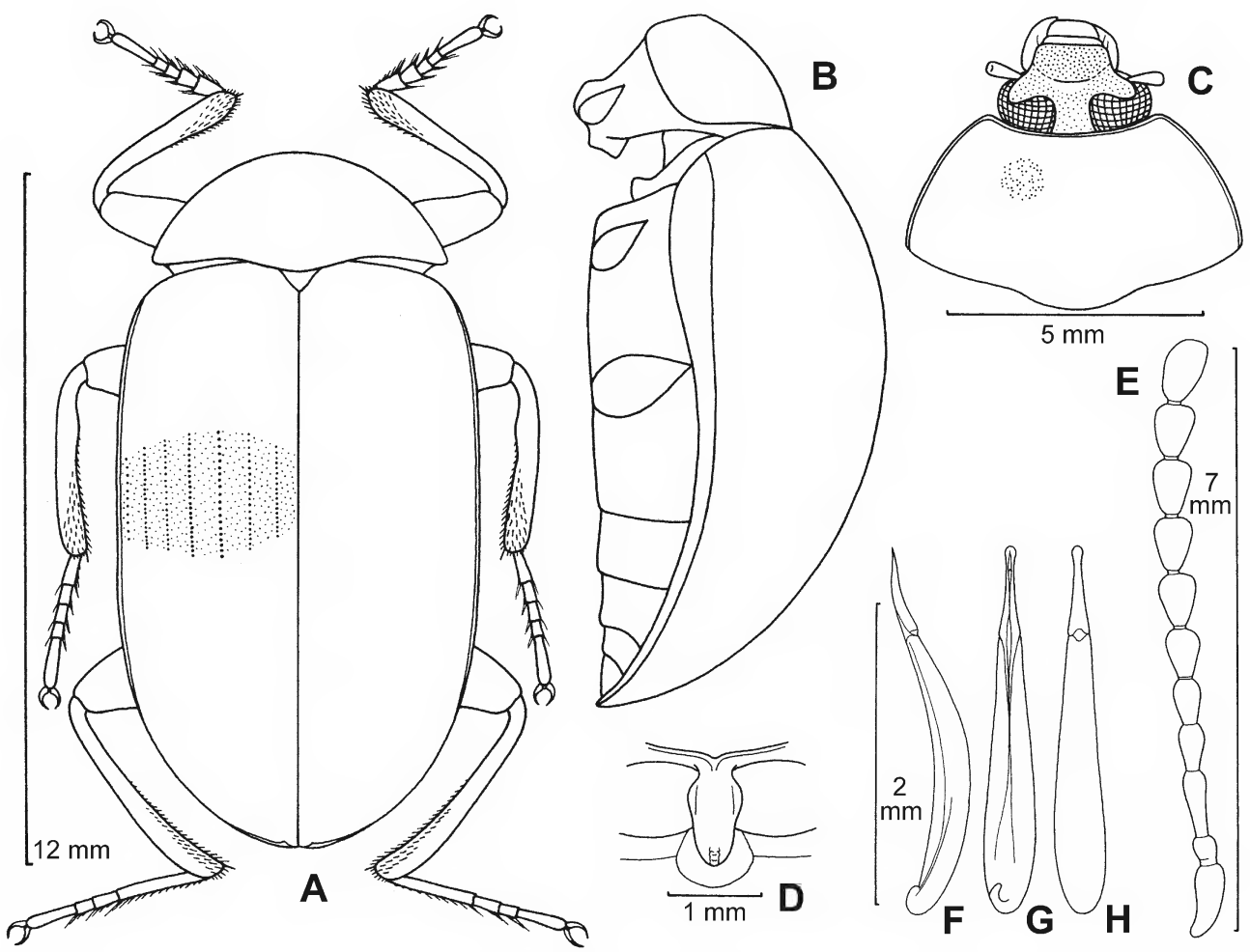

Fig. 19. *Amarygmus inermis* n. sp. – **A** Habitus, ♂. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna. **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

to fronto-clypeal suture. Genae slightly raised, anteriorly terminating clearly anterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture slightly incised in its middle part. Clypeus moderately stretched forwards, slightly convex transversely and longitudinally, with minute, closely set punctures. Mentum reversely trapezoidal. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Scarcely wider than elytra, convex transversely and longitudinally. Widest at base, anteriorly narrowing and bent. Hind corners angular, obtuse; front corners nearly rectangular. Anterior margin excavated. Lateral and anterior margins narrowly bordered. Lateral borders in dorsal view visible. Front and hind corners in lateral view angular and slightly obtuse. Surface with minute, relatively closely set punctures.

Scutellum: Triangular, with a few tiny punctures.

Elytra: Long, markedly convex transversely, moderately convex longitudinally. Maximum height somewhat anterior to the middle. With straight sides and slightly prominent shoulders. Apices of elytra mutually rounded. Lateral edges, except at shoulders, narrowly visible on the whole length in dorsal view. With rows of small, round, closely set punctures; distance between punctures on disc in row 4 about the diameter of a puncture; approximately 52 punctures in row 4. Intervals flat, with tiny, very widely separated punctures.

Prosternum: Anterior margin narrowly bent upwards, at midlength with a narrow, short keel which is directed towards apophysis. Apophysis relatively narrow, along procoxae slightly widened and sides somewhat raised, space in between with a shallow median groove; posterior to procoxae stretched backwards, with slightly narrowing sides; apically rounded and with a median keel.

Mesosternum: Anterior margin of the posterior part excavated in the middle. Lateral margins slightly raised.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Disc with a few small, elongate punctures with tiny hairs anteriorly, a few tiny punctures posteriorly. Median line slightly incised on the whole length.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Sternites 1+2 with small, closely set punctures. Punctures on the subsequent sternites more and more evanescent. Sternite 5 with a slight posteromedial depression.

Antennae: Short, reaching to anterior tenth of elytra. Length/width ratio of antennomeres 1–11 equals to 12:6½ / 6:5½ / 13:5½ / 11:6 / 10:7 / 10:9 / 9:10 / 11:10 / 11:10 / 10:10 / 13:10.

Legs: Short. Femora thickened towards the second third. Protibiae straight, thickened apically. Mesotibiae slightly bent, inner apical half with short, semi-erect hairs. Metatibiae straight in basal half, slightly incurved in the apical half, inner apical half with short, semi-erect hairs. Protarsomeres 1–3 moderately enlarged in males. Lengths of protarsomeres 1–5 as 9:8:6:6:21, lengths of mesotarsomeres 1–5 as 12:9:8:7:21, lengths of metatarsomeres 1–4 as 31:12:10:21.

Aedeagus: See Fig. 19 F–H.

Amarygmus infans **n. sp.**
(Fig. 20A–E)

Holotype (♂): Sabah mer., Borneo, Banjaran Maitland, Batu Punggul [primary lowland rainforest], 25.–27.V.1995, Ivo Jeniš leg. [both antennomeres 11 missing] (ZSMB).

Paratype: Same data as holotype [left antennomeres 7–11 and right antennomeres 3–11 missing] (1 ♂ ZSMB).

Etymology

Infans (Lat.) = a small child.

Diagnosis

Tiny, elongate oval. Elytra so densely and uniformly punctured that the primary rows of punctures are not easily recognizable. Frons of medium width. Antennae relatively long. Upperside bronze coloured, legs light brown. Male protarsomeres 1–3 not widened [holo- and paratype are males which can be inferred from the brush-like pilosity on the soles of protarsomeres 1–4].

Amarygmus infans n. sp. is similar to *A. dohertyi* (Pic, 1915) (redescribed and illustrated by Bremer 2002a: 3–5), but *A. dohertyi* is larger (body length 3.78–4.72 mm), and the punctures of the elytral intervals are similarly closely set but much smaller than those of the primary rows (thus the primary rows are easily recognizable).

Description

Measurements: Body length 3.04+3.22 mm; body width 1.75+2.02 mm. – Ratios: Pronotum: width/length 1.62+1.78; width hind corners/width front corners 1.67+1.70. Elytra: length/width 1.33–1.36; length elytra/length pronotum 3.00+3.45; maximum width elytra/maximum width pronotum 1.30+1.32.

Colouration: Elytra copper coloured with a slight reddish tinge and reduced lustre. Pronotum somewhat darker and without a reddish tinge. Underside brown, slightly lustrous. Femora lighter brown than underside. Legs light brown. Antennomeres 1–5 light brown, 6 darker brown, 7–10 black. Frons dark brown except the anterior part which is light brown; clypeus nearly yellow.

Head: Frons of medium width, as wide as length of antennomere 3, anterior part with small, not very closely set punctures, posterior part with closely set punctures. Genae short, barely raised, anteriorly terminating posterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture arched, moderately incised.

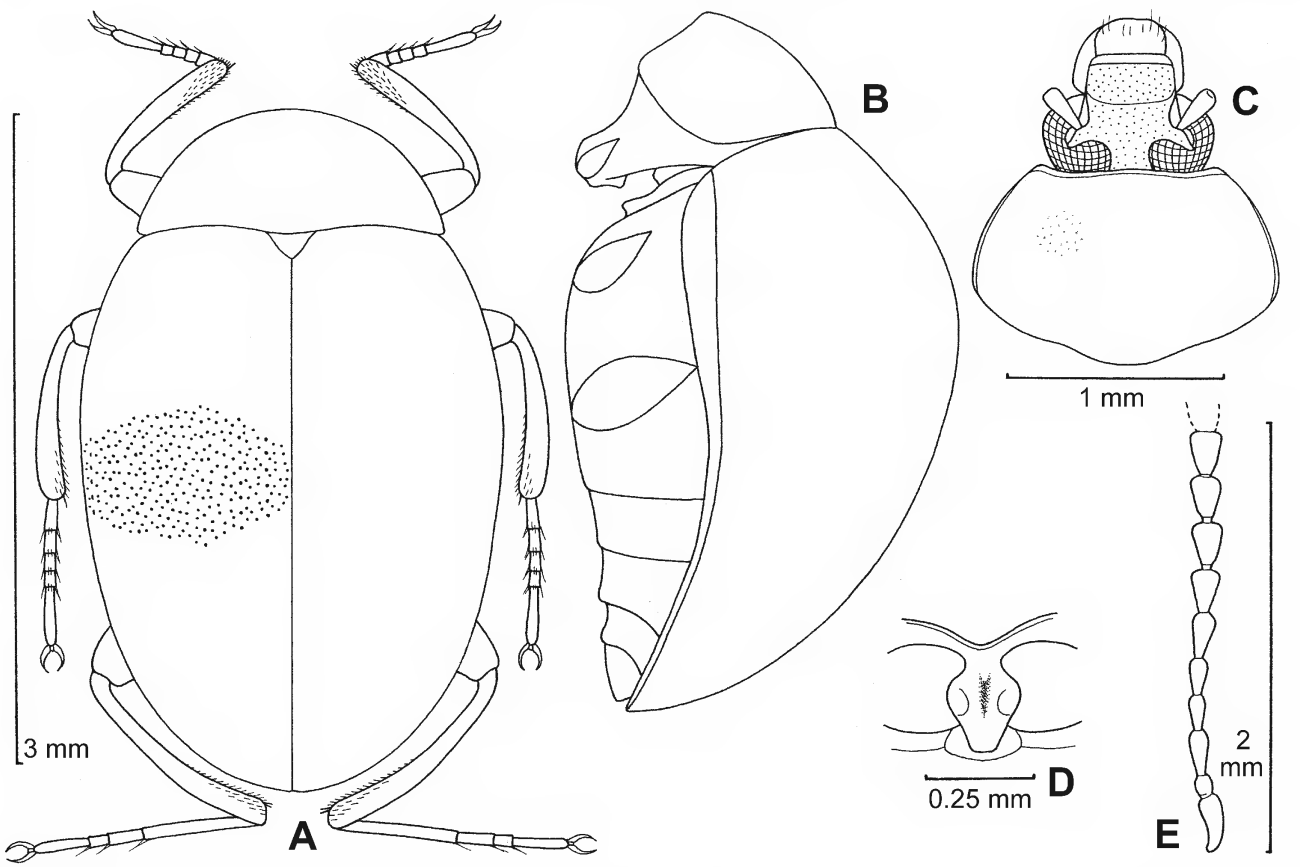

Fig. 20. *Amarygmus infans* n. sp. – **A** Habitus, ♂. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

Clypeus stretched forwards, slightly convex transversely, with small, irregularly set, widely separated punctures. Mentum widening anteriorly, sides somewhat bent and flat, space in between moderately convex transversely. Underside of neck impunctate. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

P r o n o t u m : Convex transversely, only slightly convex longitudinally. Widest at base, anteriorly narrowing and bent. Hind corners in dorsal view angular, slightly obtuse; front corners rounded. Anterior margin nearly straight. Lateral and anterior margins bordered. Lateral borders in dorsal view very narrowly visible. Front and hind corners in lateral view rounded, obtuse. Surface with minute, indistinct, widely separated punctures.

S c u t e l l u m : Triangular, with a few tiny punctures.

E l y t r a : Ovate, markedly convex transversely, somewhat less convex longitudinally. Maximum width and height at the end of the first third. Shoulders not prominent. Apices of elytra mutually rounded. Lateral edges very narrowly visible in dorsal view. With small, rather closely set punctures; punctures of the rows nearly as large as the punctures of the intervals, thus it is not easy to recognize the punctures of the rows as such. Intervals flat.

P r o s t e r n u m : Anterior margin narrowly bent upwards, slightly retracted towards apophysis in the middle. Apophysis not very wide, along procoxae somewhat widened and lateral margins raised like a small button; posterior to procoxae slightly descending with somewhat narrowing sides; apically straight.

M e s o s t e r n u m : Posterior part narrowing towards base, anterior margin excavated in the middle.

M e t a s t e r n u m : Anterior margin between mesocoxae rounded, bordered. Posterior to anterior margin there are a few shallow punctures of medium size. Remaining part of disc with widely separated, tiny punctures; short, recumbent hairs originating from these punctures (character of males only?). Median line incised in the posterior fourth.

S t e r n i t e s : Anterior margin of sternite 1 between metacoxae ogival, narrowly bordered. Discs of sternites with tiny, widely separated punctures and tiny, recumbent hairs. Sternite 5 posteromedially neither depressed nor excavated.

A n t e n n a e : Long, reaching to anterior three-fifths of elytra. Length/width ratio of antennomeres 1–10 equals to 13:5 / 6:4 / 10:3½ / 8:3½ / 8:4 / 10½:5 / 10:6 / 10½:6½ / 10:7 / 9:7.

Legs: Of medium length. Femora thickened towards the second third. Protibiae slightly bent. Mesotibiae somewhat more bent than protibiae. Metatibiae moderately bent. Soles of protarsomeres 1–4 pilose, brush-like. Lengths of protarsomeres 1–5 as 2½:2½:2:2:11, lengths of mesotarsomeres 1–5 as 6:3½:3:2:12, lengths of metatarsomeres 1–4 as 23:9:4:12.

Amarygmus intermedius n. sp.
(Fig. 21A–H)

Holotype (♂): Borneo, Malaysia, Sarawak, Kubah NP, HQ vic. [edge of primary lowland rainforest], 100–300 m, at night, on bark of trees, 27.–28.III.2009, R. Grimm (CG).

Paratypes: Same data as holotype (1 ♂ ZSMB). – Borneo, Malaysia, Sarawak, Gunung Gading NP, 100–300 m, 31.III.–4.IV.2009, R. Grimm (1 ♀ CG). – W Malaysia, Pahang, Fraser's Hill, 110 km NW of Kuala Lumpur, 23.–24.VI.1995, leg. S. & E. Bečvář (1 ♂ SSB).

Etymology

Intermedius (Lat.) = intermediary.

Diagnosis

Of medium size. Elytra oval, markedly convex, with striae and medium-sized, rhombic punctures; intervals on disc flat, laterally convex. Frons extremely narrow. Elytra dark coppery, pronotum greenish blue, legs brown. Metatarsomere 1 very long.

Amarygmus intermedius n. sp. is very close to *A. powanpowanus* Masumoto et Makihara, 1997 (from Sarawak, Sumatra and the Malayan Peninsula, see Masumoto & Makihara 1997: 135, fig. 113; also described and illustrated as *A. nemestrinus* by Bremer 2006b: 18–19, fig. 3) and *A. silvester* Bremer, 2004 (from Sabah, Sumatra, and the Malayan Peninsula, see Bremer 2004c: 122–123). *A. intermedius* shows somewhat intermediate characters between *A. powanpowanus* and *A. silvester*.

A. silvester has brown femora and tibiae like *A. intermedius*, but has somewhat less bent mesotibiae, smaller punctures in the elytral striae, and obtuse but angular pronotal front corners (widely rounded in *A. intermedius*).

A. powanpowanus has rows of small punctures on the elytra (striae with relatively large punctures in *A. interme-*

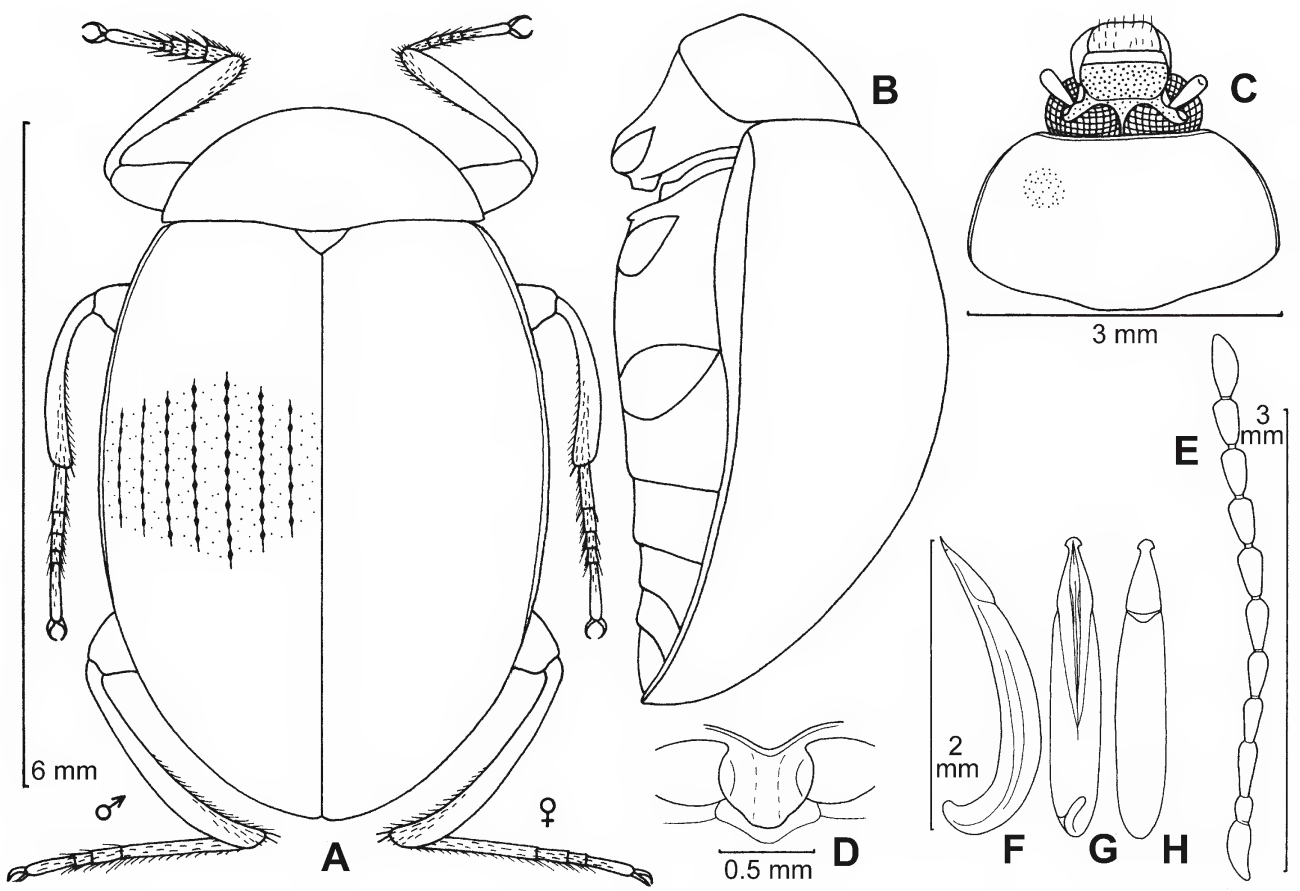

Fig. 21. *Amarygmus intermedius* n. sp. – **A** Habitus; legs on left side ♂, right side ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna. **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

dius), the lateral elytral intervals are flat (convex in *A. intermedius*), femora and tibiae are dark, nearly black (brown in *A. intermedius*), and the apical third of the metafemora is more bent.

Description

Measurements: Body length 5.65–6.05 mm; body width 3.62–3.90 mm. – Ratios: Pronotum: width/length 1.89–2.00; width hind corners/width front corners 1.85–1.95. Elytra: length/width 1.31–1.34; length elytra/length pronotum 3.41–3.56; maximum width elytra/maximum width pronotum 1.32–1.36.

Colouration: Elytra dark coppery, lustrous. Pronotum greenish blue, with reduced lustre. Scutellum brown. Legs brown. Antennomeres 1–5 brown, 6 intermediate in colour, 7–11 black. Underside dark brown (darker than femora), lustrous.

Head: Frons very narrow, as wide as one ocellus of eye. Genae narrow, somewhat raised, anteriorly terminating at the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture slightly incised, situated just anterior to eyes. Clypeus stretched forwards, convex transversely and longitudinally, with small punctures; tiny hairs originating from these punctures. Mentum reversely trapezoidal; lateral margins wide, flat, space in between convex transversely. Underside of neck microreticulated, with small, closely set punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Wide, moderately convex transversely and longitudinally. Widest at base, anteriorly narrowing and bent. Hind corners angular, obtuse. Front corners widely rounded. Anterior margin slightly excavated. Lateral and anterior margins continuously bordered. Lateral borders in dorsal view very narrowly visible. Front and hind corners in lateral view obtuse, front corners rounded, hind corners angular. Surface with tiny, irregularly set, moderately widely separated punctures.

Scutellum: Triangular, with a few tiny punctures, sides slightly rounded.

Elytra: Short, oval, markedly convex. Maximum height and width somewhat anterior to the middle. Shoulders not prominent. Apices of elytra mutually rounded. Lateral edges narrowly visible in dorsal view. With slightly incised striae with rhombic, medium-sized punctures (punctures of striae 1–3 smaller, those of striae 1–2 round); distance between punctures on disc in stria 4 equal to the diameter of a puncture; punctures becoming evanescent towards apex. Intervals on disc almost flat, laterally clearly convex, with tiny, widely separated punctures.

Prosternum: Anterior margin continuously bent upwards, retracted towards apophysis in the middle, forming an obtuse angle; a narrow keel originating from the middle part projecting into apophysis. Apophysis short, wide, lateral margins widened like a wing and somewhat globosely raised, space in between like a wide groove; apex widely angular.

Mesosternum: Posterior part short, wide, its anterior margin markedly excavated in the middle.

Metasternum: Anterior margin between mesocoxae rounded, broadly bordered. Anterior part of disc with coarse, relatively closely set punctures, posterior part with sparse, tiny punctures; short, recumbent hairs originating from these punctures in both sexes. Median line superficially incised in the posterior half.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Sternites impunctate, except male sternite 5 which has small punctures and hairs of medium length around the sligth posteromedial depression.

Antennae: In both sexes nearly of the same length, reaching to middle of elytra. Length/width ratio of antennomeres 1–11 equals to 16:7 / 9:6 / 17:5½ / 13:6 / 14:6 / 16:7 / 17:7 / 17:7 / 17:7 / 16:7 / 21:8.

Legs: Short. Femora widened towards the second third. Protibiae straight, in males slightly more thickened in their apical half than in females; meso- and metatibiae bent. Male protarsomeres 1–3 slightly widened. Lengths of protarsomeres 1–5 in male as 9:7:6:5:24, lengths of mesotarsomeres 1–5 as 17:10:9:8:14, lengths of metatarsomeres 1–4 as 47:14:8:23.

Aedeagus: See Fig. 21F–H.

Amarygmus invenustus **n. sp.**
(Fig. 22A–H)

Holotype (♂): Borneo, Sabah, Danum Valley [primary lowland rainforest], 4°58'N 117°48'E, *Parashorea tomentella*, *Asplenium nidus*, Tembaling 2, FogTray 2, 19.X.1999, M. D. F. Ellwood, 401 (BMNH).

Etymology

Invenustus (Lat.) = inconspicuous.

Diagnosis

Small, oval, inconspicuous, slightly convex transversely and longitudinally. Elytra with somewhat incised, narrow striae in which small, narrow punctures only become visible at higher magnification. Frons relatively narrow. Antennae short with a relatively large, oval antennomere 11. Protarsomeres 1–3 very slightly enlarged in males. Upperside coppery with a slight metallic shine, legs and antennae brown.

A. omissus Bremer, 2002 (Bremer 2002a: 30–32) from Peninsular Malaysia has about the same size and shape of body and legs as *Amarygmus invenustus* n. sp., but the frons is wider, the punctures on the pronotum are larger, and the punctures of the elytral striae are well visible (those of *A. invenustus* barely visible).

Description

Measurements: Body length 3.70 mm; body width 2.26 mm. – Ratios: Pronotum: width/length 1.86; width hind corners/width front corners 1.78. Elytra: length/width 1.26; length elytra/length pronotum 3.32; maximum width elytra/maximum width pronotum 1.41.

Colouration: See diagnosis above. Underside brown, lustrous.

Head: Frons about as wide as half length of antennomere 3, with minute, widely separated punctures. Genae small and narrow, moderately raised, anteriorly terminating approximately at the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture somewhat incised, depressed in the middle. Clypeus moderately stretched forwards, weakly convex transversely, its punctures larger than those on frons. Mentum reversely trapezoidal, with flat, lustrous lateral margins. Mandibles sulcated on outer surface, apically bifid.

Pronotum: Moderately convex transversely, slightly convex longitudinally. Widest at base, anteriorly narrowing and bent. Anterior margin somewhat excavated. Front corners rectangular; hind corners angular and obtuse. Lateral and anterior margins bordered. Lateral borders in dorsal view narrowly visible. Front corners in lateral view angular with an angle of 100°; hind corners angular, more obtuse. Surface with small, distinct, not too closely set punctures.

Scutellum: Triangular, impunctate.

Elytra: Oval, moderately convex transversely, slightly convex longitudinally. Maximum width and height at the end of the first third. Shoulders rounded. Apices of elytra mutually rounded. Lateral edges narrowly visible in dorsal view. Wth incised striae with small and narrow punctures which are not easily visible. Intervals on disc very slightly convex, clearly convex laterally, with indistinct, tiny, widely separated punctures (visible at 50-fold magnification).

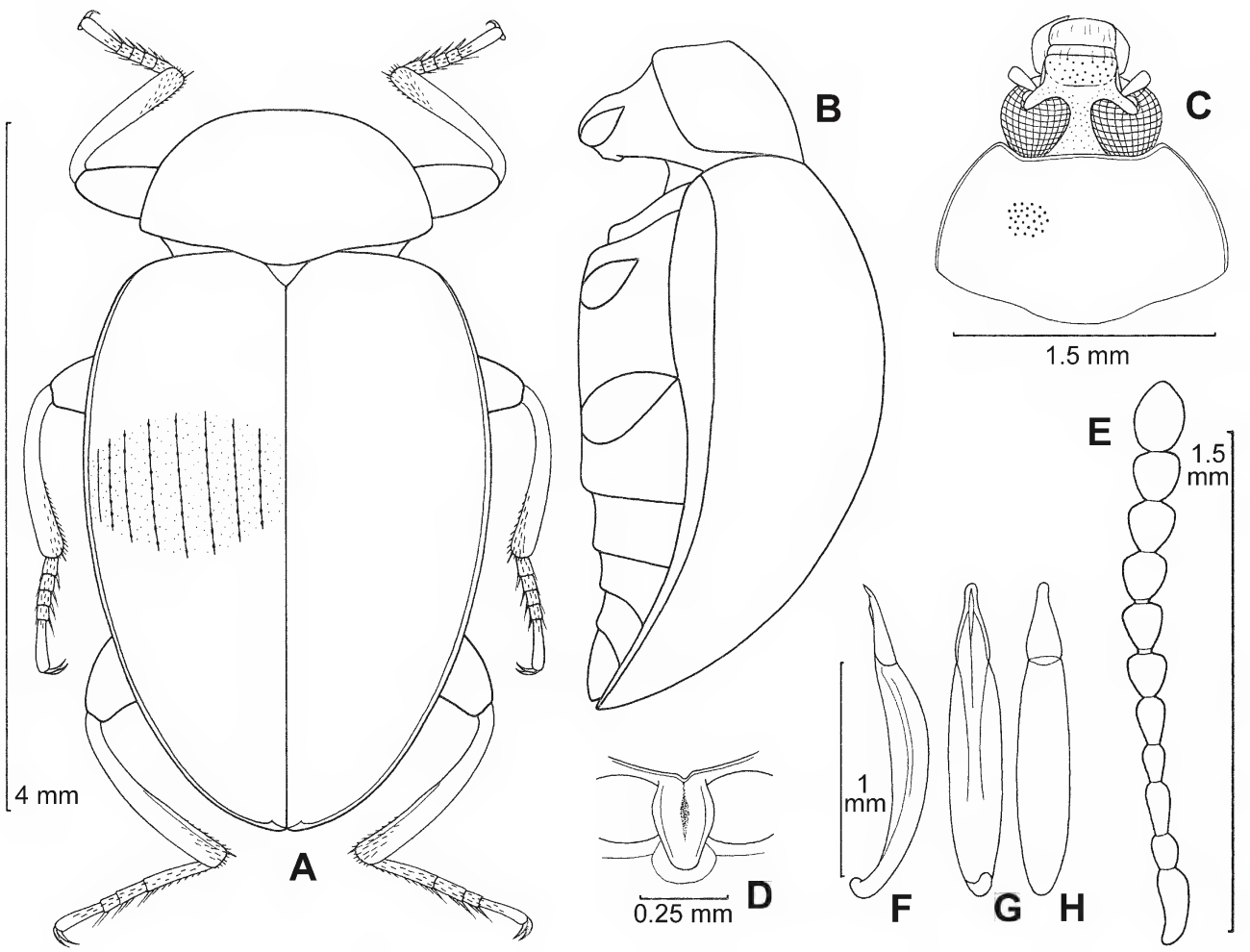

Fig. 22. *Amarygmus invenustus* n. sp. – **A** Habitus, ♂. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna. **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

Prosternum: Very short. Anterior margin narrowly bent upwards, somewhat retracted towards apophysis at midlength. Apophysis oval, lateral margins along procoxae distinctly raised and widened, space in between with a deep median sulcus.

Mesosternum: Posterior part with a longitudinal sulcus medial to the narrow lateral margins on each side; anterior margin excavated in the middle.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Disc with medium-sized punctures on anterior half, tiny punctures on posterior half; short, recumbent hairs originating from these punctures. Median line translucent, neither depressed nor incised.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Discs of sternites with tiny, widely separated punctures with short, recumbent hairs. Sternite 5 slightly depressed anterior to posteromedial margin.

Antennae: Short, reaching to anterior fifth of elytra. Length/width ratio of antennomeres 1–11 equals to 9:4½ / 5:4 / 12:3½ / 4½:3½ / 6½:4 / 6½:5 / 6½:5½ / 8:6 / 8:6½ / 7½:6½ / 11:7.

Legs: Short. Femora thickened towards the second third. Pro- and mesotibiae moderately bent, inner apical half of protibiae slightly thickened, metatibiae bent. Lengths of protarsomeres 1–5 as 4:4:4:3:14, lengths of mesotarsomeres 1–5 as 9:5:4:4:14, lengths of metatarsomeres 1–4 as 16:8:5:14.

Aedeagus: See Fig. 22F–H.

Amarygmus lautus **n. sp.**
(Fig. 23A–H)

Holotype (♂): Malaysia, Borneo, Sarawak, Gunung Gading NP [primary lowland rainforest], 100–250 m, at night, on bark of trees, 9.–12.III.2008, R. Grimm (CG).

Paratypes: Same data as holotype (1 ♀ CG, 1 ♀ ZSMB). – E Sumatra, Riau Prov., Bukit Tigapuluh Nat. Park, 0°50'S 102°26'E, 18.–25.I.2000, D. Hauck leg. [left antennomeres 6–11 and right antennomeres 5–11 missing] (1 ♂ ZSMB). – Same data as before [left antennomeres 9–11 and right antennomeres 8–11 missing] (1 ♂ ZSMB). – Same data as before [right antennomeres 9–11 missing] (1 ♂ ZSMB). – Same data as before [severely damaged] (1 ♂ SSB).

Etymology

Lautus (Lat.) = fine, elegant.

Diagnosis

Small, oval. Males with long, closely set hairs on front of profemora, back of mesofemora, prosternal apophysis, and mesosternum. Females without hairs on pro- and mesofemora; hairs on prosternal apophysis and mesosternum of medium length, distinctly shorter and less closely set than in males. Male protarsomeres 1–3 not widened. Hind corners of pronotum slightly rounded. Elytra with striae with medium-sized punctures; intervals nearly flat, laterally slightly convex. Pronotum blue, elytra coppery with a slight reddish tinge, femora and tibiae black, hairs yellowish red.

Because of the male sexual characters and the shape of the body, *A. lautus* n. sp. belongs to the species group near *A. postdepressus* Pic, 1938 (redescribed and illustrated by Bremer 2004a: 29–31, fig. 16). Within this group it is especially close to *A. postdepressus*. The elytra of *A. postdepressus* are more elongate than those of *A. lautus*, the hind corners of the pronotum are more angular, the hairs of the soles of male protarsomeres 1–3 are more distant laterally, and the colour of the upperside is uniformly coppery (without a reddish tinge).

Description

Measurements: Body length 6.13–6.53 mm; body width 3.98–4.42 mm. – Ratios: Pronotum: width/length 1.89–2.00; width hind corners/width front corners 1.77–1.83. Elytra: length/width 1.23–1.28; length elytra/length pronotum 3.41–3.63; maximum width elytra/maximum width pronotum 1.41–1.46.

Colouration: Elytra with a coppery ground colour and a reddish tinge, slightly lustrous. Pronotum blue, lustrous and with a slightly sericeous shine. Upperside of head, femora and tibiae black; tarsi brown. Antennomeres 1–6 brown, 7–11 black. Underside dark brown to black.

Head: Frons relatively narrow, approximately as wide as length of antennomere 2, in females slightly wider than in males, with minute, not very closely set punctures. Genae short, slightly raised, anteriorly terminating posterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture incised. Clypeus relatively wide, moderately stretched forwards, slightly convex transversely, punctures slightly larger than those on frons and with tiny hairs. Mentum widening anteriorly, with bent sides; lateral margins flat, lustrous, space in between convex. Underside of neck with large, shallow, closely set, partially fused punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Moderately wide, moderately convex transversely and longitudinally. Sides bent and narrowing anteriorly. Hind corners slightly rounded; front corners in dorsal view narrowly rounded and slightly projecting. Anterior margin moderately excavated. Lateral and anterior margins bordered. Lateral borders in dorsal view narrowly visible on the whole length. Front corners in lateral view rectangular; hind corners rounded and obtuse. Surface with minute, relatively widely separated punctures.

Scutellum: Triangular, with a few tiny punctures.

Elytra: Oval, convex transversely, slightly less convex longitudinally. Maximum height and width at the level of the anterior third. Shoulders rounded. Apices of elytra mutually rounded. Lateral edges narrowly visible on the

whole length in dorsal view. With somewhat incised striae with medium-sized, round to slightly elongate punctures; distance between punctures on disc equal to the diameter of a puncture. Intervals on disc nearly flat, laterally slightly convex, with tiny, widely separated punctures.

P r o s t e r n u m : Anterior margin narrowly and continuously bent upwards. Apophysis wide, relatively flat and short; along procoxae somewhat widened and lateral margins slightly raised, space in between with a wide, shallow groove; posterior to procoxae margins slightly narrowing; sides markedly converging apically, apex slightly protruding in the middle; females with hairs of medium length which do not entirely hide the surface of the apophysis, males with very closely set, long hairs which hide the surface.

M e s o s t e r n u m : Anterior margin of the posterior part excavated in the middle. Lateral margins with a few tiny tubercles. Posterior part very wide, pilosity in males and females as on prosternal apophysis.

M e t a s t e r n u m : Anterior margin between mesocoxae nearly straight in the middle, broadly bordered. Disc with a few medium-sized punctures anteriorly, widely separated, tiny punctures posteriorly; with hairs of medium length which do not hide the surface. Median line somewhat depressed.

S t e r n i t e s : Anterior margin of sternite 1 between metacoxae ogival, broadly bordered. Sternites with tiny, widely separated punctures; small, recumbent hairs originating from these punctures.

A n t e n n a e : Relatively long, reaching to middle of elytra. Length/width ratio of antennomeres 1–11 in male equals to 21:8 / 9:7 / 24:7 / 19:7 / 20:7 / 19:7 / 21:8 / 19:9 / 20:9 / 18:9 / 24:10, in female to 20:8 / 8:6½ / 22:6 / 16:6 / 16:6 / 16:6 / 19:8 / 17:9 / 18:9 / 17:9 / 22:9.

L e g s : Of medium length. Femora thickened towards the second third; for sexual dimorphism see diagnosis above. Protibiae moderately bent, thickened apically. Mesotibiae as protibiae, but not thickened apically. Metatibiae in males somewhat longer than in females, clearly bent and with small tubercles on inner side. Lengths of protarsomeres 1–5 as 6:6:6:6:27, lengths of mesotarsomeres 1–5 as 12:8:7:6:26, lengths of metatarsomeres 1–4 as 29:15:8:27.

A e d e a g u s : See Fig. 23F–H.

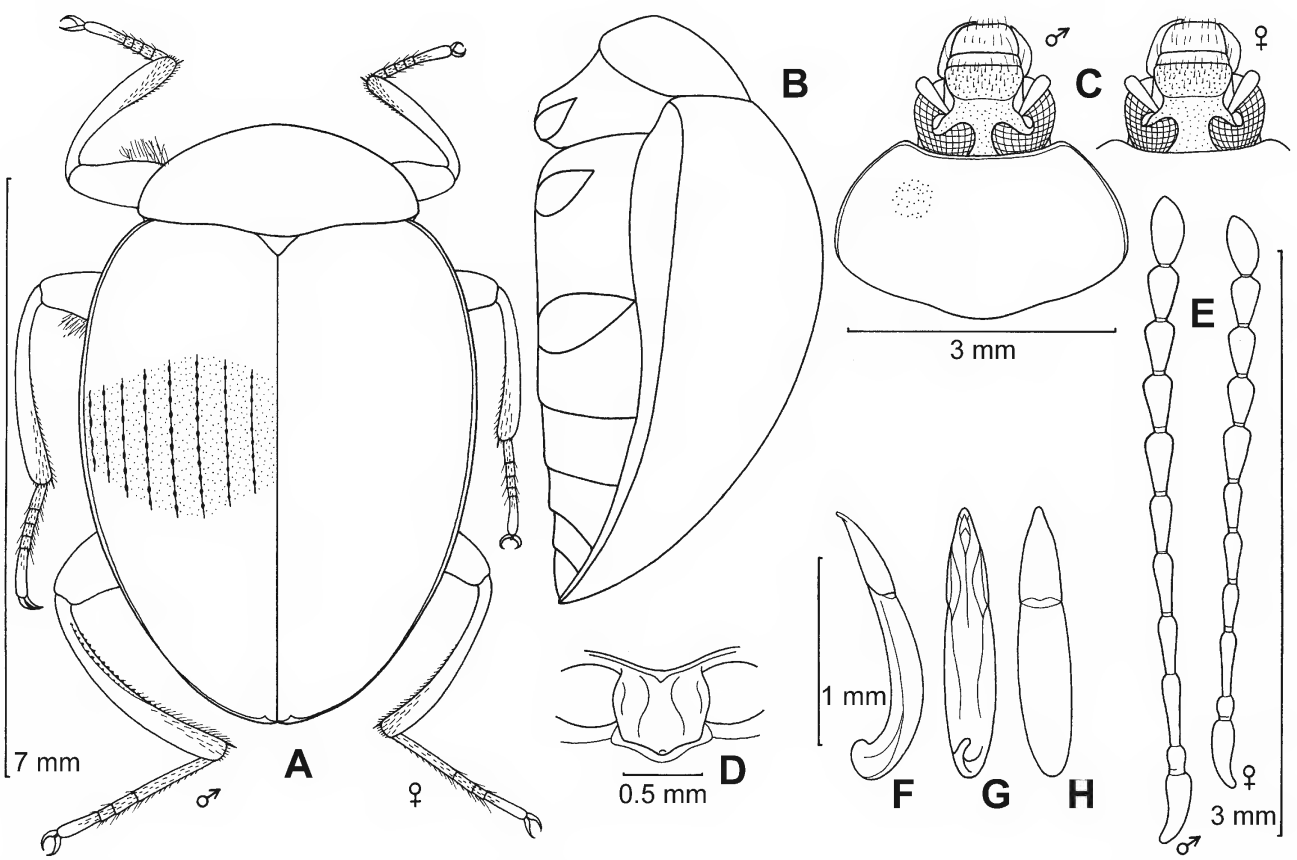

Fig. 23. *Amarygmus lautus* n. sp. – **A** Habitus; legs on left side ♂, right side ♀. **B** Body, lateral view. **C** Head and pronotum ♂, head ♀. **D** Prosternal apophysis. **E** Antennae ♂ and ♀. **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

Amarygmus makiharai **n. sp.**
(Fig. 24A–E)

Holotype (♀): Indonesia, Kalimantan, Bukit Bangkirai near Balikpapan, 25.I.2000, H. MAKIHARA leg. [right antennomeres 10–11, left antennomeres 8–11, right middle leg, right hind leg, and left metatarsomeres 3–4 missing] (CA).

Etymology

Dedicated to Mr. H. MAKIHARA (Tsukuba), who collected many species of Tenebrionidae on Sumatra and on Borneo.

Diagnosis

Of medium size, with very long, narrow, slightly oval, microreticulated elytra. Pronotum nearly as wide as elytra. Frons not very wide. Middle part of fronto-clypeal suture touching inner margins of eyes. Antennae very short. Legs short. Characterized by the microreticulated elytra and elytral rows with punctures with a violet bottom and a narrowly violet halo; these punctures tapering into striae posterolaterally.

A. acerbus n. sp. from Kalimantan is another species with markedly elongate elytra and a clearly microreticulated surface, but it is larger (body length 8.52 mm) and the punctures of the elytral rows do not have a violet bottom and halo.

Elongate elytra in combination with striolated elytral punctures, a violet bottom of these punctures and violet or red haloes are also present in the following species: *A. selatanus* (Masumoto et Makihara, 1997) (see MASUMOTO & MAKIHARA 1997: 139–140, fig. 127; also described and illustrated as *A. bellulus* by BREMER 2003a: 86–89), *A. mitschkei* (Pic, 1938) (redescribed and illustrated by BREMER 2003a: 67–69), and *A. haeuseri* Bremer, 2010 (BREMER 2010b: 32, 43–44).

A. selatanus from the Malayan Peninsula, Sumatra and Borneo has oblong elytra and about the same body length as *A. makiharai* (5.65–6.33 mm). It differs from *A. makiharai* in the maximum elytral width shortly behind the base, the straight, posteriorly narrowing elytral sides, shorter elytra (length/width ratio 1.72–1.79), and larger violet haloes around the punctures of the elytral rows.

A. mitschkei, also from the Malayan Peninsula, Sumatra and Borneo, is larger than *A. makiharai* (body length 8.07–8.33 mm), the elytra are shorter (length/width ratio 1.65–1.74) and subparallel, and the violet haloes around the punctures of the elytral rows are larger.

A. haeuseri from the Malayan Peninsula is also larger than *A. makiharai* (body length 8.17 mm), and its elytra are much shorter (length/width ratio 1.46).

Description

Measurements: Body length 5.97 mm; body width 2.62 mm. – Ratios: Pronotum: width/length 1.74; width hind corners/width front corners 1.68. Elytra: length/width 1.88; length elytra/length pronotum 3.65; maximum width elytra/maximum width pronotum 1.12.

Colouration: Elytra dark green with a strong microreticulation; for punctures of elytral rows see diagnosis above. Pronotum with slight microreticulation and strong iridescence in all colours of the light spectrum. Legs black. Underside dark brown.

Head: Frons not very wide, but clearly wider than length of antennomere 3 (like 8 : 12), with tiny, widely separated punctures. Genae very narrow, somewhat raised, anteriorly terminating anterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture incised in its middle part which is touching the anterior margin of the eyes laterally. Clypeus shortly stretched forwards, markedly convex longitudinally, punctures slightly larger than those of frons. Mentum reversely trapezoidal; with flat, lustrous lateral margins, space in between opaque, convex transversely. Underside of neck with small, closely set punctures. Mandibles sulcated on outer surface, apically bifid.

Pronotum: Markedly convex transversely, moderately convex longitudinally. Widest at base, about as wide as base of elytra; sides bent and narrowing towards front corners. Hind corners angular, obtuse; front corners rounded. Anterior margin nearly straight, its middle part slightly stretched forward towards head. Lateral and anterior margins continuously bordered. Lateral borders in dorsal view narrowly visible in the posterior three-fifths. Front and hind corners in lateral view obtuse, front corners rounded, hind corners angular. Surface with minute, distinct, relatively closely set punctures.

Scutellum: Triangular, impunctate.

Elytra: Very long, narrow, slightly oval, very convex transversely. Maximum height near the middle. Shoulders rounded. Apices of elytra mutually rounded. Lateral edges barely visible in dorsal view. With rows of medium-sized, mostly elongate punctures which are situated in some distance (Fig. 24A); some punctures are like short striae; about 16 punctures in row 4; most rows continue into narrowly incised striae posterolaterally and apically. Intervals flat, impunctate.

Prosternum: Anterior margin continuously and narrowly bent upwards. Apophysis narrow, margins along procoaxe slightly widened but strongly raised, space in between with a narrow, deep, median groove; lateral margins posterior to procoxae slightly converging and narrowly lifted; apex pointed in the middle; posterior part with a clearly lifted median keel.

Mesosternum: Posterior part long, narrow, its anterior margin with a median excavation. Lateral margins granulated and lifted.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Disc behind anterior margin

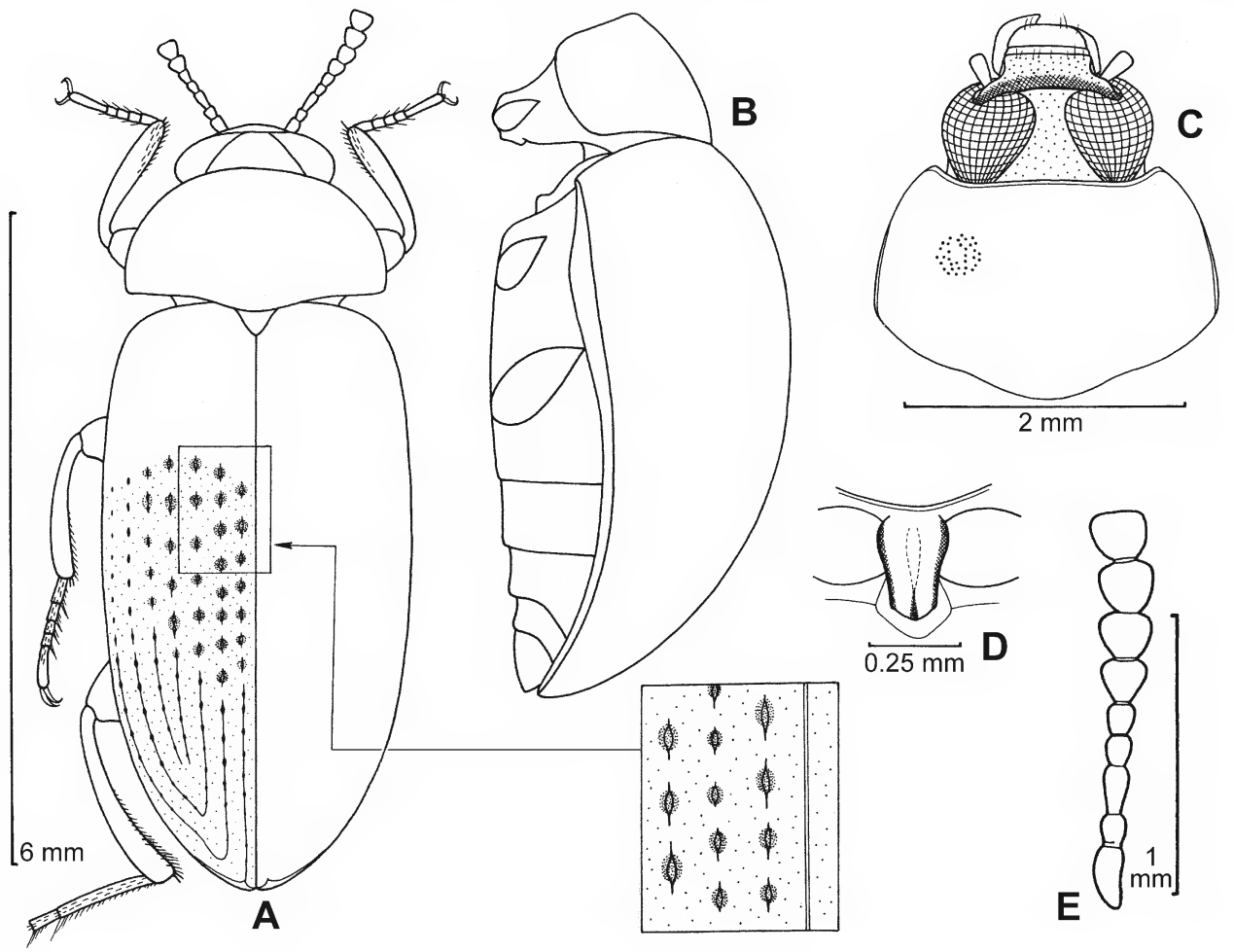

Fig. 24. *Amarygmus makiharai* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

laterally with approximately three rows of transversally arranged, medium-sized punctures, posterior part impunctate. Median line incised.

S t e r n i t e s : Anterior margin of sternite 1 between metacoxae ogival, bordered. Sternite 1 with a few minute punctures, sternites 2–5 impunctate.

A n t e n n a e : Short, the available 9 antennomeres not reaching to base of pronotum. Length/width ratio of antennomeres 1–9 equals to 10:5 / 6:4 / 8:4 / 5½:4½ / 6:5 / 8:8 / 8:9 / 8:9½ / 9:9½.

L e g s : Short. Tibiae thin. Femora thickened towards the second third. Protibiae straight, mesotibiae slightly bent, metatibiae nearly straight in the basal half, moderately bent in the apical half. Lengths of protarsomeres 1–5 as 2:2:2:2:11, lengths of mesotarsomeres 1–5 as 6:4:3:2:11, lengths of metatarsomeres 1–2 [3 and 4 missing] as 21:7.

Amarygmus miser **n. sp.**
(Fig. 25A–E)

H o l o t y p e (♀): Borneo, Malaysia, Sarawak, Kubah NP, nr. Matang Wildlife Centre [primary lowland rainforest], at night, on bark of trees, 19.–22.IX.2008, R. Grimm (CA).

P a r a t y p e : W Malaysia, Perak, Banjaran Bintang, Bukit Berapit (Taiping), 10.–12.III.1997, Ivo Jeniš leg. (1 ♀ ZSMB).

Etymology

Miser (Lat.) = deplorable.

Diagnosis

Very small, slightly elongate, oval. Elytra with somewhat incised striae, strial punctures of medium size; intervals slightly convex, not very densely punctured. Frons relatively narrow. Antennae rather long. Fronto-clypeal suture markedly incised and depressed, forming a slope

between frons and clypeus; clypeus situated on a lower level than frons. Protibiae straight in the apical half; mesotibiae slightly bent; metatibiae bent. Metatarsomere 1 very long. Elytra uniformly dark coppery, lustrous; pronotum dark green, lustrous; legs brown.

Amarygmus miser n. sp. is very close to *A. fraterculus* Bremer, 2002 from Sumatra and Sabah (Bremer 2002a: 23–25); both species share the same body shape, a similarly narrow frons, antennae of similar length, and a similar colouration of upperside and legs. *A. fraterculus*, however, is slightly smaller, the fronto-clypeal suture is only slightly incised in the middle and without a slope between frons and clypeus, the pronotal punctures are coarser and closer set, the front corners are wider rounded, the punctures of the elytral intervals are somewhat larger, and elytral interval 1 is brownish.

A similar species with respect to body shape and colouration is also *A. abditus* Bremer, 2007 from Sabah (Bremer 2007: 3–6). *A. abditus* is approximately as large as *A. miser* (body length 3.04–3.13 mm), but the frons is wider, the antennae are shorter, and the punctures of the elytral rows are larger.

A similar body shape, incised striae on the elytra, long antennae and a relatively narrow frons is also present in *A. inditus* Bremer, 2010 (Bremer 2010b: 44–46) from Peninsular Malaysia. This species is larger than *A. miser* (body length 3.89–4.12 mm), the frons is somewhat wider, and the mesotibiae are clearly more bent.

Another close species is *A. astutus* n. sp.; see unter diagnosis of this species.

Description

Measurements: Body length 3.00+3.26 mm; body width 1.79+1.90 mm. – Ratios: Pronotum: width/length 1.95+2.03; width hind corners/width front corners 1.75+1.76. Elytra: length/width 1.39+1.41; length elytra/length pronotum 3.46+3.63; maximum width elytra/maximum width pronotum 1.27+1.28.

Colouration: For upperside of body, head and legs see diagnosis above; tarsi brown. Underside brown. Antennomeres 1–4 light brown, 5 darker brown, 6–11 black (antennomere 11 apically brightened).

Head: Frons relatively narrow, about as wide as length of antennomere 4, with minute, distinct, not very

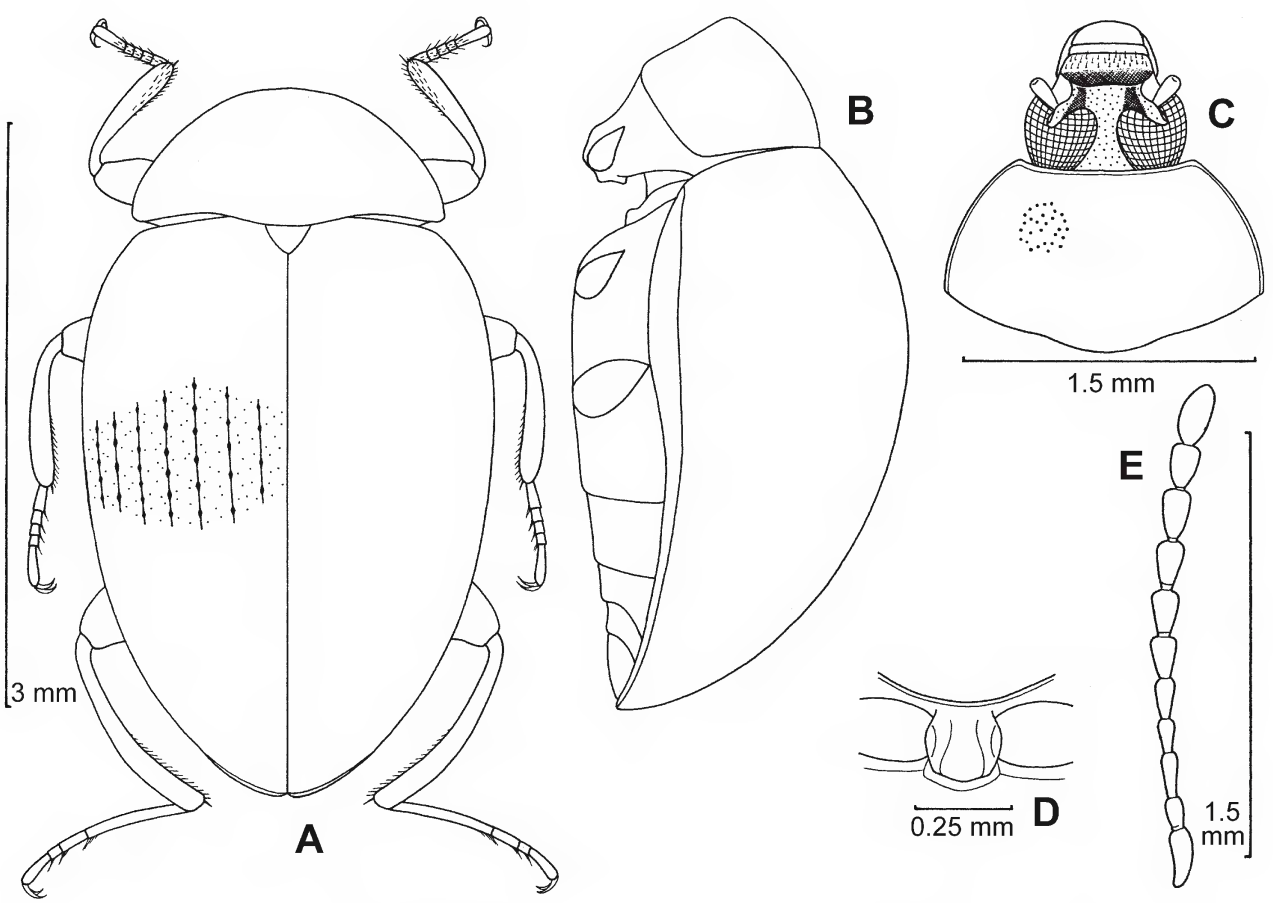

Fig. 25. *Amarygmus miser* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

closely set punctures. Genae narrow, anteriorly terminating at the level of the middle part of the fronto-clypeal suture. For fronto-clypeal suture see diagnosis above. Clypeus moderately stretched forwards, slightly convex transversely and longitudinally, its punctures larger than those on frons. Mentum widening anteriorly, with somewhat bent lateral margins; lateral margins flat, lustrous, space in between more opaque, convex transversely. Underside of neck with large, transversely aligned punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

P r o n o t u m : Relatively narrow, markedly convex transversely, slightly convex longitudinally. Widest at base, moderately narrowing and bent anteriorly. Hind corners angular, obtuse; front corners in dorsal view moderately rounded. Anterior margin straight. Lateral and anterior margins continuously bordered. Lateral borders in dorsal view narrowly visible in the posterior three-fourths. Front corners in lateral view angular, with an angle of about 100°; hind corners angular, with an angle of about 110°. Surface with small, not very closely, but irregularly set punctures.

S c u t e l l u m : Triangular, with a few tiny punctures.

E l y t r a : Somewhat elongate and oval, markedly convex transversely, somewhat less convex longitudinally. Maximum width and height at the beginning of the second third. Shoulders rounded. Apices of elytra mutually rounded. Lateral edges in dorsal view narrowly visible in the middle and at the apex. With clearly incised striae with medium-sized, slightly elongate punctures which are somewhat larger and more distinct in the paratype; distance between punctures (of the holotype) in row 4 approximately 2 times diameter of a puncture; about 24 punctures in row 4. Intervals slightly convex, with minute, not closely set punctures.

P r o s t e r n u m : Anterior margin narrowly and continuously bent upwards, with a small triangular process towards apophysis at midlength. Apophysis wide, posterior part like a semi-circle, with a wide, shallow, median groove.

M e s o s t e r n u m : Posterior part wide, short, its anterior margin excavated in the middle. With a shallow sulcus laterally.

M e t a s t e r n u m : Anterior margin between mesocoxae rounded, bordered. Anterior part of disc with medium-sized, not very closely set punctures, posterior part with tiny, widely separated punctures; a few semi-erect hairs of medium length originating from these punctures. Median line neither incised nor depressed.

S t e r n i t e s : Anterior margin of sternite 1 between metacoxae ogival, bordered. All sternites with tiny, widely separated punctures and tiny, recumbent hairs.

A n t e n n a e : Relatively long, reaching to middle of elytra. Length/width ratio of antennomeres 1–11 equals to 9:4 / 6:3 / 9:3 / 6:3 / 7:4 / 8:4 / 8½:4 / 8½:4 / 8:4 / 7:4 / 11:4.

L e g s : Short. Femora distinctly thickened towards the second third. Protibiae slightly bent in basal half, straight in apical half. Mesotibiae slightly bent. Metatibiae bent. Lengths of protarsomeres 1–5 as 2½:2:2:2:9, lengths of mesotarsomeres 1–5 as 7:4:3:3:9, lengths of metatarsomeres 1–4 as 24:6:4:9.

Amarygmus morpheus **n. sp.**
(Fig. 26A–H)

H o l o t y p e (♂): Borneo, Malaysia, Sabah, Gunung Alab [primary mountainous forest], 1500 m, on fungous trunk, 4.–5.I.2010, R. Grimm (CG).

Etymology

Μορφεύς (Greek) = God of dreams.

Diagnosis

Large, elongate oval. Elytra with two reddish brown maculae on each elytron, circumvented by the black ground colour as shown in Fig. 26A. Posterior part of pronotum black, anterior part and upperside of head reddish brown. Antennomere 11 uniformly reddish brown, antennomeres 7–10 black. Femora uniformly yellowish brown. Elytra with striae; intervals on disc nearly flat. Frons relatively wide. Antennae long. Legs long, metatibiae straight. With characteristic male sexual characters: prolonged forelegs with the anterior part somewhat bent and thickened; protarsomeres 1–3 enlarged and protarsomeres 1–4 with laterally widely projecting hairs originating from the soles; back of meso- and metafemora with long erect hairs; metatibiae, and less so mesotibiae, with a tuft of long, recumbent hairs on inner basal fourth. Aedeagus very narrow.

With respect to size, body shape and form of maculae, *Amarygmus morpheus* n. sp. strongly resembles *A. sanguinans* Fairmaire, 1893 (redescribed and illustrated by Bremer 2005b: 25–27, fig. 15). *A. sanguinans*, however, has a uniformly black antennomere 11, somewhat shorter antennae, wave-like shaped metatibiae, and long hairs on back of meta- and mesofemora and a tuft of hairs on inner side of meta- and mesotibiae are absent.

Another species of similar size, shape, form of maculae, equally long antennae and long hairs on the back of male meso- and metatibiae is *A. binotatus* Pic, 1915 (redescribed and illustrated by Bremer 2005b: 10–12, fig. 15). Antennomere 11 of *A. binotatus* is yellowish brightened in its apical three-fourths (uniformly reddish brown in *A. morpheus*), the frons is slightly narrower, male metatibiae have long erect hairs on the inner apical three-fourths (absent in *A. morpheus*), and there is no tuft of hairs on inner side of male meso- and metatibiae.

A. adornatus Bremer, 2010 (Bremer 2010a: 160–162) is another similar species. It differs from *A. morpheus* in the smaller body length (7.32–8.44 mm), somewhat different

elytral maculae, the uniformly black antennomere 11, absence of hairs on back of male meso- and metafemora, and absence of a tuft of hairs on inner side of male metatibiae.

Description

Measurements: Body length 10.8 mm; body width 5.5 mm. – Ratios: Pronotum: width/length 1.49; width hind corners/width front corners 1.77. Elytra: length/width 1.59; length elytra/length pronotum 2.97; maximum width elytra/maximum width pronotum 1.25.

Colouration: Head brown, lustrous. Pronotum lustrous, front part reddish brown, hind part black (with an irregular border between both colours). Elytra with reddish brown maculae on a black ground (Fig. 26A). Femora brown; basal and apical parts of tibiae brown, middle parts black; tarsi brown. Antennomeres 1–6 brown, 7–10 black, 11 uniformly reddish brown. Underside brown.

Head: Frons relatively wide, as wide as length of antennomere 4, with a median, shallow depression and tiny punctures. Genae short, only in their posterior part somewhat developed and slightly raised, anteriorly terminating clearly posterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture translucent, scarcely incised or depressed. Clypeus stretched forwards, somewhat convex transversely, with punctures larger than those on frons. Mentum with rounded margins posteriorly, widening with straight margins anteriorly; lateral margins flat, lustrous, space in between slightly microreticulated and slightly convex transversely. Underside of neck with shallow, transversely aligned punctures. Mandibles sulcated on outer surface near apex, apically bifid.

Pronotum: Markedly convex transversely, somewhat less so longitudinally. Widest slightly posterior to the middle; sides converging towards hind corners, somewhat more converging towards front corners. Hind corners angular, obtuse; front corners about rectangular, slightly prominent. Anterior margin moderately excavated. Lateral and anterior margins continuously bordered. Lateral borders in dorsal view narrowly visible, except a short part posterior to front corners. Front and hind corners in lateral

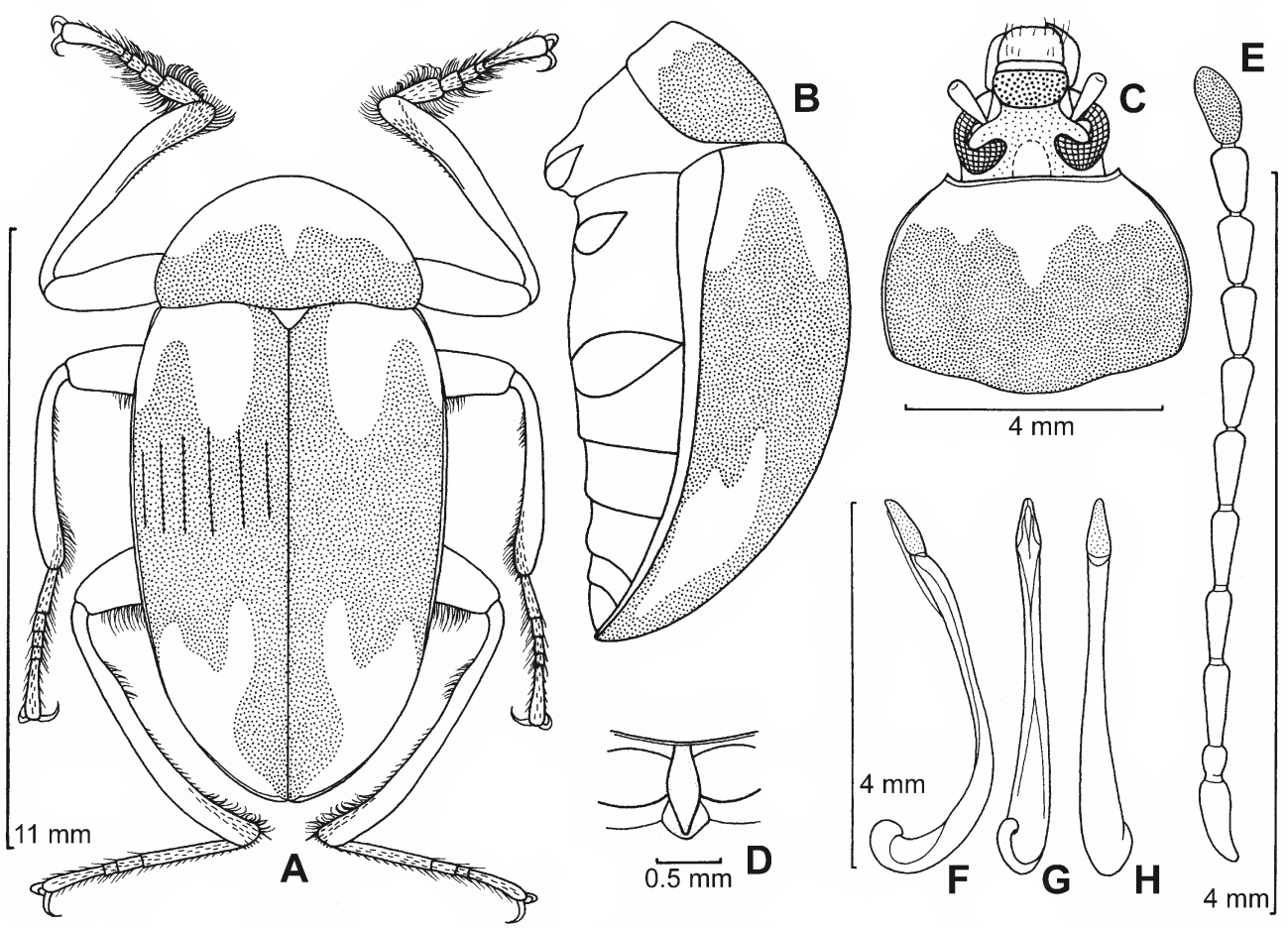

Fig. 26. *Amarygmus morpheus* n. sp. – **A** Habitus, ♂(body reddish brown, punctured areas black). **B** Body, lateral view. **C** Head and pronotum (pronotum reddish brown, punctured area black). **D** Prosternal apophysis. **E** Antenna (punctured antennomere 11 reddish brown). **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

view angular, obtuse. Surface with indistinct, tiny, widely separated punctures.

Scutellum: Triangular, with a few tiny punctures, sides slightly bent.

Elytra: Moderately convex transversely and longitudinally. Maximum height at the level of the anterior third. Shoulders in dorsal view angular, obtuse. Apices of elytra mutually rounded. Lateral edges very narrowly visible in dorsal view. Apical part with a few very short erect hairs (visible at 25-fold magnification). With slightly incised striae with small punctures; distance between punctures less than diameter of a puncture; striae extending towards apex. Intervals on disc very slightly convex, clearly convex laterally, impunctate on disc, with some tiny, indistinct punctures near apex.

Prosternum: Anterior margin, except in the middle, narrowly bent upwards. Apophysis very narrow, between anterior margin and the level between procoxae markedly ascending, posterior to procoxae markedly descending; lifted like a narrow nose apically; space between procoxae without a median sulcus; surface with a few erect hairs of medium length.

Mesosternum: Posterior part very short and narrow, its anterior margin excavated in the middle, front corners of the excavation strongly raised like a big tubercle.

Metasternum: Anterior margin between mesocoxae rounded, faintly bordered. Anterior apophysis somewhat raised like a bump, on its surface longitudinally striolated. Disc relatively closely covered with small punctures which are partially transversely fused. Median line deeply incised up to the anterior apophysis.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Discs of sternites 1–4 covered with small, relatively closely set punctures with sparse, semi-erect hairs of medium length, disc of sternite 5 with dense, recumbent hairs of medium length.

Antennae: Long, reaching to posterior third of elytra. Shape of antennomere 11 bean-like. Length/width ratio of antennomeres 1–11 equals to 14:7½ / 8:6 / 19:6½ / 17:6½ / 18:6½ / 18:7 / 18:7½ / 18:7½ / 18:8 / 17:8 / 20:8.

Legs: Femora thickened towards the second third, with two rows of small tubercles anteriorly; back of meso- and metafemora with two rows of long hairs. Protibiae long, with a narrow base, thickened and incurved in the apical half, on inner side with some small tubercles and tiny, semi-erect bristles. Mesotibiae bent basally, but main part straight, thickened apically, at the level of inner basal fourth with a tuft of thin, relatively short hairs (like those of metatibiae but not so pronounced). Metatibiae straight, on inner side with a tuft of erect hairs at the level of the basal fourth. Lengths of protarsomeres 1–5 as 19:11:6:4:25, lengths of mesotarsomeres 1–5 as 16:9:6:5:27, lengths of metatarsomeres 1–4 as 34:12:8:25.

Aedeagus: See Fig. 26F–H.

Amarygmus neglectus **n. sp.**
(Fig. 27A–E)

Holotype (♀): Borneo, Sabah, route Keningau–Papar, II. 2000, M. Snižek leg. (ZSMB).

Etymology

Neglego, neglectum (Lat.) = do not pay attention (I did not recognize this species as undescribed until recently).

Diagnosis

Of medium size, elongate oval. Elytra with rows of medium-sized, closely set punctures, flat intervals and distinct violet and green reflections which are usually aligned longitudinally. Pronotum with colourful reflections. Frons of medium width. Antennae long. Legs brown.

Amarygmus hilaratus Bremer, 2007 (Bremer 2007: 15–17) from Sabah resembles *A. neglectus* n. sp. in the oval shape and closely set punctures in the elytral rows, but is larger (body length 10.7 mm) and has short antennae. The males of *A. hilaratus* have an area of short, closely set hairs on the front side of the profemora, and the apical half of the metatibiae is widened (males of *A. neglectus* are unknown).

Description

Measurements: Body length 7.84 mm; body width 3.98 mm. – Ratios: Pronotum: width/length 1.78; width hind corners/width front corners 1.66. Elytra: length/width 1.65; length elytra/length pronotum 3.76; maximum width elytra/maximum width pronotum 1.28.

Colouration: Upperside coppery, somewhat lustrous, elytra with interrupted longitudinal reflections of violet and green. Pronotum with intensely violet iridescence near base and green iridescence in anterior half. Legs brown. Antennomeres 1–5 brown, 6–11 black. Underside dark brown, femora somewhat brighter brown.

Head: Frons flat, of medium width, approximately as wide as length of antennomere 4, covered with tiny, relatively closely set punctures. Genae only slightly raised, anteriorly terminating somewhat anterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture negligibly incised in its middle part. Clypeus moderately stretched forwards, nearly flat, punctures as on frons. Mentum reversely trapezoidal; lateral margins flat, lustrous, space in between somewhat convex, less lustrous. Mandibles with a sulcus on outer surface, apically bifid.

Pronotum: Relatively narrow, markedly convex transversely, moderately convex longitudinally. Maximum width at base, moderately bent, narrowing towards front corners. Hind corners angular, slightly obtuse; front corners rounded, obtuse. Anterior margin straight. Lateral and anterior margins bordered. Lateral margins in dorsal

view narrowly visible in the posterior fourth. Front and hind corners in lateral view obtuse, front corners rounded, hind corners angular. Surface with minute, distinct, not very closely set punctures.

Scutellum: Triangular, with a few tiny punctures.

Elytra: Elongate, slightly oval, markedly convex transversely, moderately convex longitudinally. Maximum height slightly anterior to the middle. Shoulders rounded, slightly prominent dorsad. Apices of elytra mutually rounded. Lateral edges in dorsal view narrowly visible posterior to shoulders. With rows of medium-sized, closely set punctures; distance between punctures on disc in row 4 about ½–1 times diameter of a puncture; about 40 punctures in row 4. Intervals flat, slightly convex posterolaterally, with tiny, widely separated punctures.

Prosternum: Anterior margin narrowly bent upwards, retracted towards apophysis, forming an obtuse angle at midlength. Apophysis slightly ascending towards level of procoxae, moderately descending towards apex; along procoxae lateral margins thickened and widened, space in between with a median groove; sides posterior to procoxae somewhat narrowing; apically rounded; surface with a few short hairs.

Mesosternum: Anterior margin of the posterior part excavated at midlength. Lateral margins slightly higher than the smooth middle part.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Disc with widely separated, tiny punctures. Median line slightly incised on the whole length.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered; inner rim of the anterior border with closely set, large punctures. All sternites with tiny, widely separated punctures.

Antennae: Long, reaching to anterior three-fifths of elytra. Length/width ratio of antennomeres 1–11 equals to 18:9 / 9:7 / 19:7 / 16:7 / 17:7½ / 18:7½ / 19:8½ / 20:9 / 20:9 / 20:9 / 26:9.

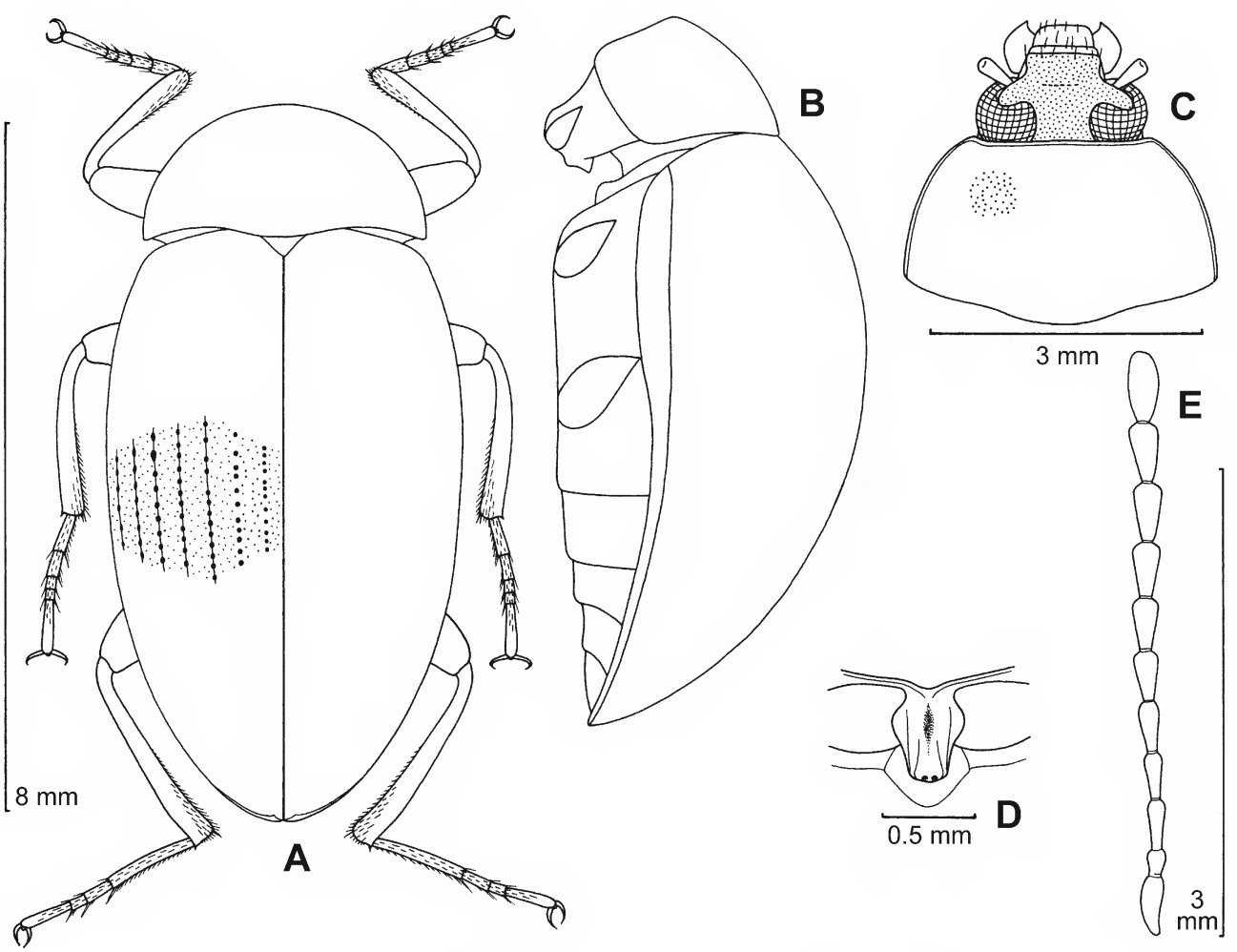

Fig. 27. *Amarygmus neglectus* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

Legs: Of medium length. Femora thickened towards the second third. Protibiae straight; mesotibiae very slightly bent, inner apical half with semi-erect hairs of medium length; metatibiae straight in basal half, somewhat incurved in apical half, inner apical half with semi-erect hairs of medium length. Lengths of protarsomeres 1–5 as 8:6:4:2½:15, lengths of mesotarsomeres 1–5 as 11:7:4½:3:15, lengths of metatarsomeres 1–4 as 25:8:4:14.

Amarygmus nepenthes **n. sp.**
(Fig. 28A–E)

Holotype (♀): Malaysia, Sabah Prov., Banjaran Crocker Mts., Gunung Alab Peak [primary mountainous forest], 1650–1800 m, 30.IV.–27.V.1996, M. Štrba & R. Hergovits leg. (ZSMB).

Etymology

Nepenthes = name of a magical Egyptian herb, according to Plinius senior in "Naturalis historia".

Diagnosis

Of medium length, elongate oval, lustrous. Upperside dark green, legs brown. Elytra with rows of round punctures of medium size and flat intervals. Frons of medium width. Antennae relatively short.

Amarygmus nepenthes n. sp. is of same size and has the same colouration as *A. viridicatus* Bremer, 2004 (Bremer 2004a: 51–52, fig. 32), a species which has been collected near the collection site of *A. nepenthes*. *A. viridicatus*, however, has markedly longer elytra (length/width ratio 1.83) with nearly straight sides, the slightly depressed elytral striae have elongate, poorly delimited punctures (punctures of *A. nepenthes* round, clearly delimited and usually not connected by lines), the penultimate antennomeres are shorter, and the pronotal sides are nearly straight (clearly bent in *A. nepenthes*).

The new species is also similar to *A. assignatus* Bremer, 2010 (Bremer 2010a: 168–170) from the same area. *A. assignatus* has a similar body shape and similar width of frons, but the punctures of the elytral rows are much smaller and the antennae are longer.

A. seductus n. sp. from Sarawak resembles *A. nepenthes* in the elytral puncture rows and length and shape of the antennae, but *A. seductus* is somewhat larger, the frons is slightly wider, and the upperside is brown with pink tinge (dark green in *A. nepenthes*).

A. tenellus Bremer, 2003 (Bremer 2003b: 60–61) from Sabah has a similar body shape and size as *A. nepenthes*, but the frons of *A. tenellus* is narrower, the elytra have striae with relatively large, rhombic punctures, and the antennae are longer.

Description

Measurements: Body length 5.49 mm; body width 2.95 mm. – Ratios: Pronotum: width/length 1.87; width hind corners/width front corners 1.76. Elytra: length/width 1.57; length elytra/length pronotum 3.74; maximum width elytra/maximum width pronotum 1.31.

Colouration: Upperside except scutellum dark green, lustrous; scutellum brown. Frons dark green; clypeus and genae brown. Underside dark brown. Femora and tibiae dark brown, tarsi light brown. Antennomeres 1–5 light brown, 6–8 increasingly darker brown, 9–11 black (11 apically brightened).

Head: Frons of medium width, about as wide as length of antennomere 3. Genae narrow, anteriorly terminating approximately at the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture slightly incised in its middle part. Clypeus moderately stretched forwards, moderately convex transversely, covered with small, not very closely set punctures. Mentum widening apically, with somewhat bent sides; lateral margins flat, lustrous, space in between slightly less lustrous and convex transversely. Underside of neck with irregularly set, medium-sized punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Convex transversely and longitudinally, slightly more depressed anterolaterally than posteriorly. Widest at base, anteriorly markedly bent and narrowing. Hind corners rounded; front corners angular and in dorsal view nearly rectangular. Anterior margin somewhat excavated laterally, its middle part slightly protruded towards head. Lateral and anterior margins continuously bordered. Lateral borders in dorsal view narrowly visible. Front and hind corners in lateral view rounded and obtuse. Surface with tiny, widely separated punctures.

Scutellum: Triangular, impunctate.

Elytra: Elongate oval, clearly convex transversely, moderately convex longitudinally. Highest near the middle. Shoulders somewhat prominent. Apices of elytra mutually rounded. Lateral edges narrowly visible in the posterior third, not visible anteriorly. With rows of small punctures, some of them linked by faint lines; distance between punctures on disc in row 4 about 1–3 times diameter of a puncture; about 30 punctures in row 4. Intervals flat, with tiny, widely separated punctures which just become visible at 50-fold magnification.

Prosternum: Anterior margin narrowly bent upwards and somewhat retracted towards apophysis. Apophysis short, lateral margins roundedly widened along procoxae, raised and leaving a wide median groove between them; apex broadly pointed.

Mesosternum: Anterior margin of the posterior part excavated in the middle.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Anterior part of disc with a few small punctures, posterior part impunctate. Median line depressed in the posterior fourth.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Sternites impunctate.

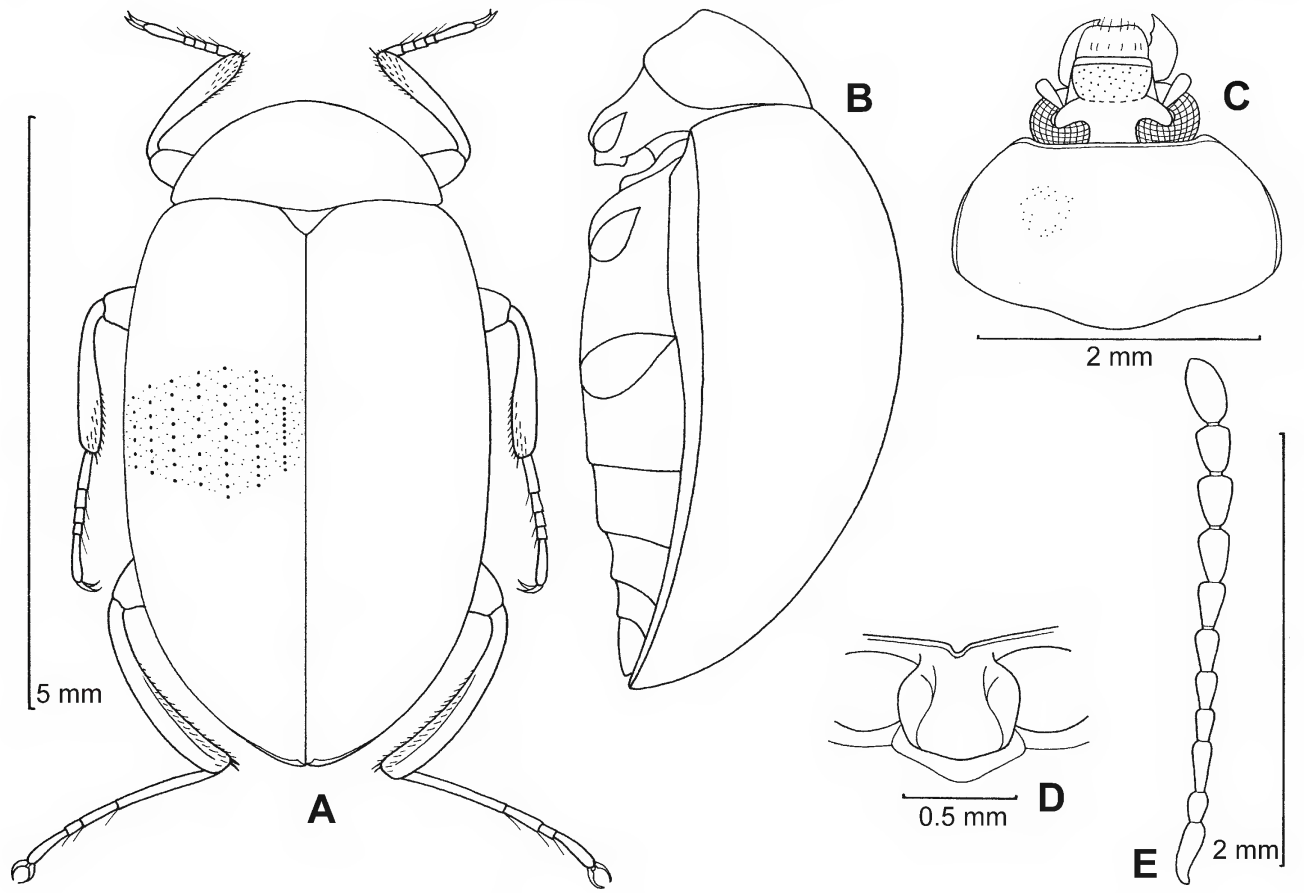

Fig. 28. *Amarygmus nepenthes* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

Antennae: Short, reaching to anterior fourth of elytra. Length/width ratio of antennomeres 1–11 equals to 12:5 / 8:4½ / 11:4 / 8:4 / 9:4½ / 10:5½ / 11:6½ / 11:6½ / 11:7 / 10:7 / 14:8.

Legs: Short. Femora thickened towards the second third. Protibiae straight; mesotibiae slightly bent; metatibiae straight in the basal two-fifths, moderately incurved in the apical three-fifths. Lengths of protarsomeres 1–5 as 5:5:5:5:19, lengths of mesotarsomeres 1–5 as 16:12:7:6:19, lengths of metatarsomeres 1–4 as 39:14:8:21.

Amarygmus pallidior **n. sp.**
(Fig. 29A–E)

Holotype (♀): Borneo, Malaysia, Sabah, 18 km NE Keningau, Crocker Range nr. Kimanis Road [fogged from a tree covered with moss], 1100 m, 28.I.2010, R. Grimm (CG).

Etymology

Pallidior (Lat.), comparative of pallidus = pale.

Diagnosis

Very tiny, elongate ovate; markedly convex transversely, somewhat less so longitudinally. Elytra uniformly yellowish brown, with rows of small, widely separated punctures and flat, scarcely punctured intervals. Pronotum dark green, nearly black, impunctate. Frons of medium width. Antennae of medium length.

Amarygmus pallidior n. sp. belongs to the group of small species affine *A. niasensis* (Pic, 1915) (redescribed and illustrated by Bremer 2002a: 11–13) which has formerly been classified as *Pseudamarygmus* Pic, 1915. However, all species of this group are markedly larger than *A. pallidior*. *A. infans* n. sp. is about as long as *A. pallidior* (3.04–3.22 mm), but it has large elytral punctures.

Description

Measurements: Body length 2.53 mm; body width 1.56 mm. – Ratios: Pronotum: width/length 1.81; width hind corners/width front corners 1.71. Elytra: length/width 1.45; length elytra/length pronotum 3.63; maximum width elytra/maximum width pronotum 1.38.

Colouration: Upperside markedly lustrous. For colouration of elytra and pronotum see diagnosis above. Head dark brown, nearly black. Legs dark brown. Antennomeres 1–4 brown, 5–11 black (apical part of antennomere 11 yellowish brightened). Underside dark brown, lustrous.

Head: Frons microreticulated, of medium width, width approximately equal to length of antennomere 3. Genae short, anteriorly terminating posterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture deeply incised over the whole width of head. Clypeus wide, situated on a lower level than frons, moderately stretched forwards, with minute, widely separated punctures. Mentum reversely trapezoidal; with flat, lustrous, lateral margins, space in between also lustrous, convex transversely. Underside of neck microreticulated, lustrous, with a few medium-sized punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Markedly convex transversely, somewhat less so longitudinally. Widest at base, anteriorly narrowing and slightly bent. Hind corners in dorsal view angular, obtuse; front corners rounded. Anterior margin straight. Lateral and anterior margins bordered. Lateral borders in dorsal view not visible. Hind and front corners in lateral view rounded, front corners more so than hind corners, both obtuse. Surface impunctate.

Scutellum: Triangular, impunctate.

Elytra: Ovate, markedly convex transversely and longitudinally. Maximum width and height slightly anterior to the middle. Shoulders not prominent. Apices of elytra mutually rounded. Lateral edges not visible in dorsal view. With rows of small, indistinct, widely separated punctures; distances between punctures on disc in row 4 about 3–4 times diameter of a puncture; about 20 punctures in row 4. Intervals flat, with tiny, indistinct, widely separated punctures.

Prosternum: Anterior margin narrowly bent upwards, somewhat retracted towards apophysis at midlength. Apophysis relatively short, lateral margins along procoxae clearly raised and widened, space in between with a deep median groove; posterior to procoxae with a rounded, scarcely descending apex.

Mesosternum: Anterior margin of the posterior part excavated, with an indistinct, longitudinal sulcus on both sides.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Disc with small, widely separated punctures and a few short, recumbent hairs. Median line neither depressed nor incised.

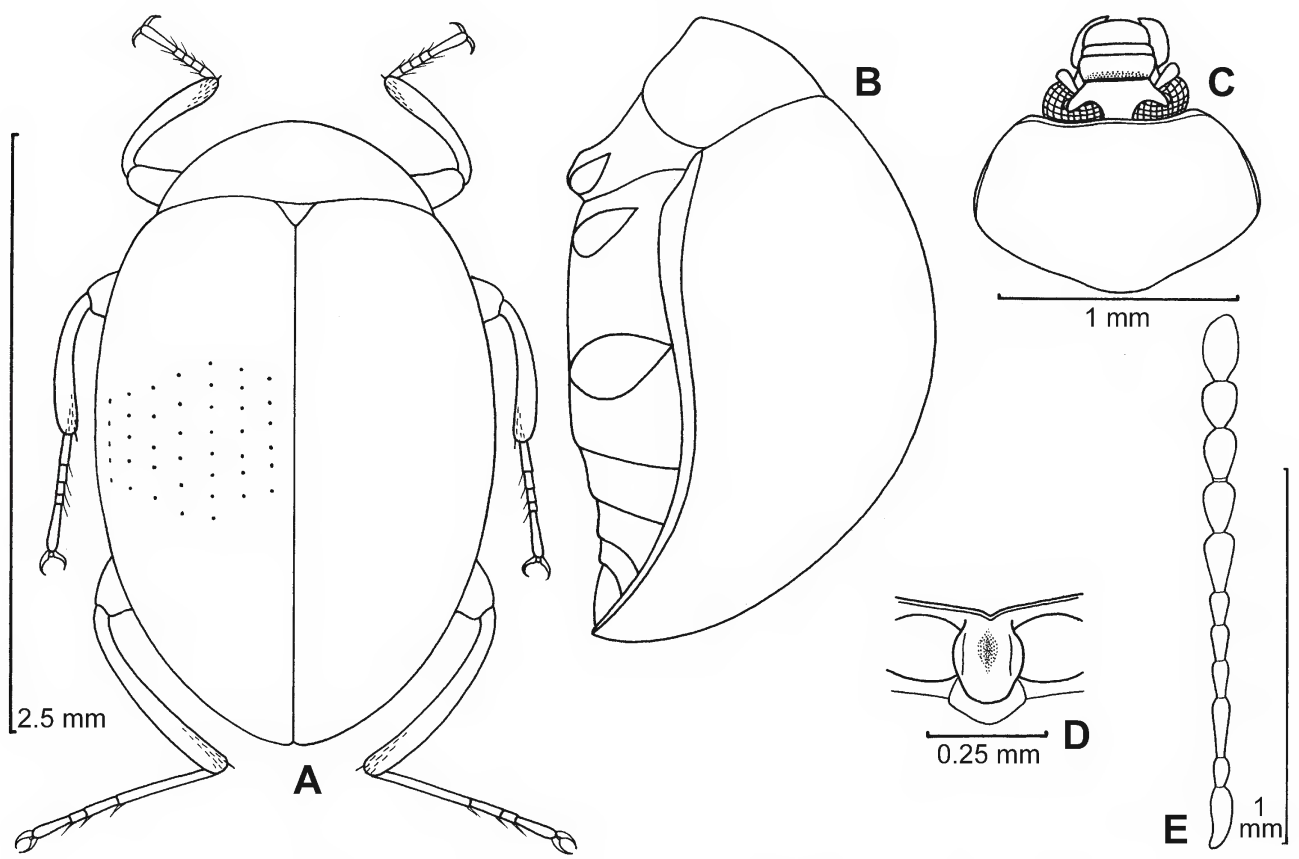

Fig. 29. *Amarygmus pallidior* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Discs of sternites with small, widely separated punctures.

Antennae: Of medium length, reaching to anterior two-fifths of elytra. Length/width ratio of antennomeres 1–11 equals to 5:3 / 4:2½ / 7½:2 / 4½:2 / 6:2 / 4½:2½ / 6:3 / 7½:4½ / 7:4½ / 6:4½ / 8:5.

Legs: Short. Femora moderately thickened towards the second third. Pro- and mesotibiae slightly bent; metatibiae straight in basal half, incurved apically. Lengths of protarsomeres 1–5 as 2:2:2:2:9, lengths of mesotarsomeres 1–5 as 6:4:2:2:9, lengths of metatarsomeres 1–4 as 19:6:3½:9.

Amarygmus pullus **n. sp.**
(Fig. 30A–H)

Holotype (♂): Borneo, Sabah, Danum Valley [primary lowland rainforest], 4°38'N 117°48'E, M. D. F. Ellwood, *Parashorea tomentella*, *Asplenium nidus*, Number 10, FogTray 7, 12.VI.1999, 396 (BMNH).

Etymology

Pullus (Lat.) = young animal.

Diagnosis

Small, elongate oval. Elytra with incised striae and elongate, not well visible punctures; intervals slightly punctured, moderately convex laterally. Frons of medium width. Genae not raised. Antennae short.

Amarygmus nepos Bremer, 2002 (Bremer 2002a: 28–30) from Sumatra and Peninsular Malaysia is very similar to *A. pullus* n. sp. with respect to size, shape and colouration. *A. nepos*, however, has clearly visible elytral punctures which are mostly slightly elongate, arranged in rows and inconstantly connected by faint lines, the pronotum is wider and has larger punctures, and the frons is narrower.

Another very similar species is *A. filiastra* n. sp. It also presents incised elytral striae in which punctures are

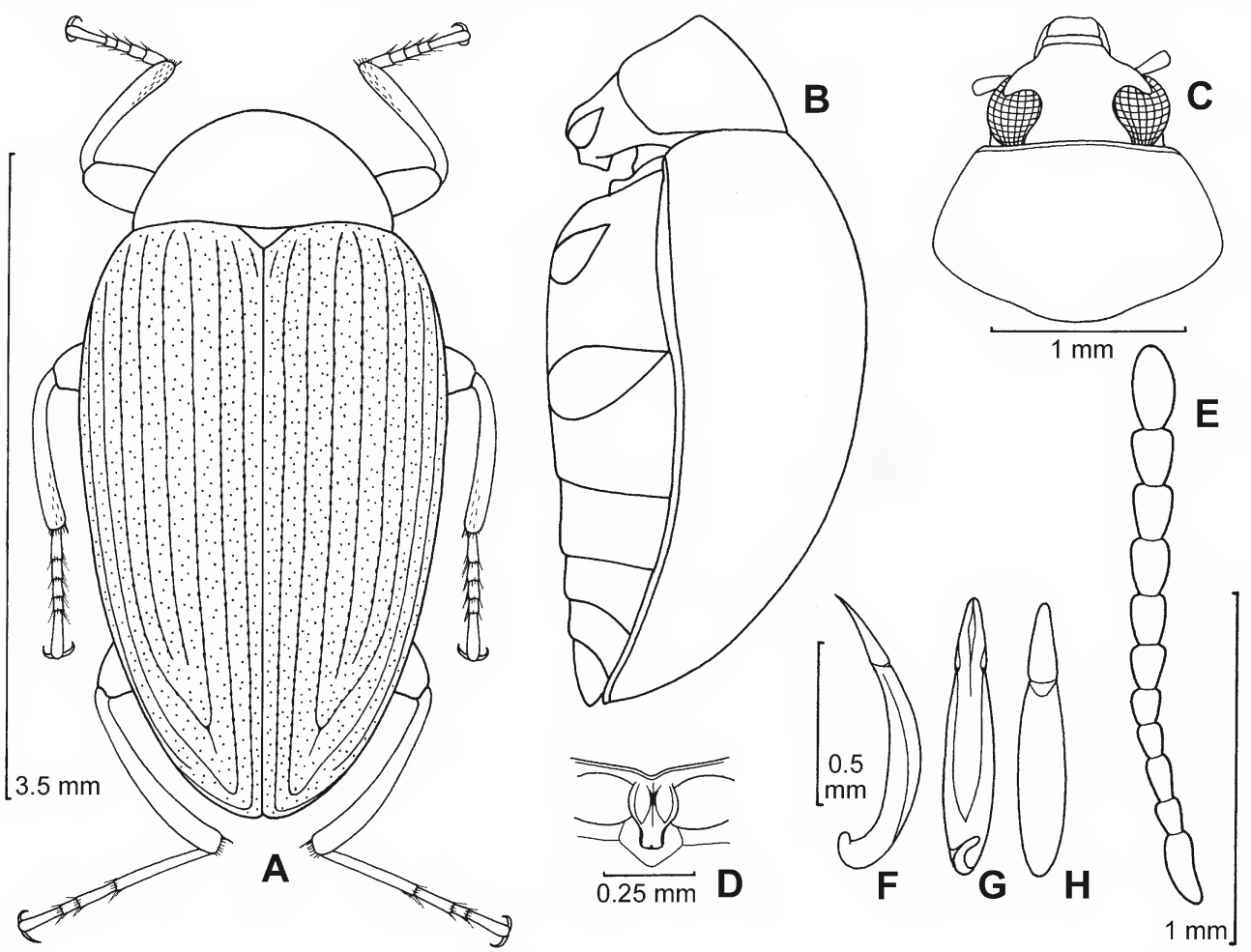

Fig. 30. *Amarygmus pullus* n. sp. – **A** Habitus, ♂. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna. **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

scarcely visible, but in contrast to *A. pullus* it has a distinctly narrower frons and a bluish green pronotum.

Description

Measurements: Body length 3.70 mm; body width 1.87 mm. – Ratios: Pronotum: width/length 1.70; width hind corners/width front corners 1.42. Elytra: length/width 1.63; length elytra/length pronotum 3.90; maximum width elytra/maximum width pronotum 1.41.

Colouration: Pronotum greyish brown, opaque. Elytra dark green with slight purple iridescence near suture. Legs dark brown. Antennomeres 1–4 brown, 5–11 black. Underside dark brown, with moderate microreticulation and somewhat reduced lustre.

Head: Frons of medium width, somewhat wider than length of antennomere 3 (like 8 : 6½), flat, with tiny, widely separated punctures (just visible at 50-fold magnification). Genae not separated from frons, lateral margins not raised. Fronto-clypeal suture scarcely visible. Clypeus only slightly stretched forwards, flat, with a few very tiny punctures. Mentum reversely trapezoidal, with flat lateral margins, space in between convex transversely. Underside of neck with a few small punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Narrow, markedly convex transversely, slightly convex longitudinally; posterior margin markedly projecting towards base of elytra, anterior margin straight. Widest at base, only slightly narrowing towards front corners. Front corners in dorsal view not visible, in lateral view rounded, obtuse; hind corners in dorsal view visible, obtuse, in lateral view more angular and widely obtuse. Lateral and anterior margins bordered. Lateral borders in dorsal view very narrowly visible in the posterior half. Surface with very tiny, widely separated punctures (visible at 50-fold magnification).

Scutellum: Triangular, impunctate.

Elytra: Elongate oval, narrow, markedly convex transversely, somewhat less convex longitudinally. Maximum width and height at the end of the first third. Shoulders slightly prominent. Apices of elytra mutually rounded. Lateral edges visible only at apex in dorsal view. With somewhat incised striae with barely visible punctures. Intervals on disc nearly flat, convex laterally, punctures very tiny (visible at 50-fold magnification) and widely separated.

Prosternum: Anterior margin continuously bent upwards. Apophysis narrow, lateral margins along procoxae somewhat widened and markedly raised, space in between with a narrow, deep, median groove; posterior to procoxae horizontally stretched backwards, lateral margins narrowly lifted ventrad, somewhat concave and trough-like in between.

Mesosternum: Anterior part at a lower level and with recumbent hairs of medium length. Posterior part small and narrow, its anterior margin excavated in the middle.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Disc smooth, without punctures. Median line neither depressed nor incised.

Sternites: Anterior margin of sternite 1 between metacoxae narrowly ogival, distinctly bordered. Sternites impunctate.

Antennae: Short, reaching to anterior fourth of elytra. Length/width ratio of antennomeres 1–11 equals to 6½:3½ / 5:3 / 6½:3 / 4½:3 / 5:3½ / 7:4½ / 7:4½ / 8:5 / 8:5 / 7½:5 / 11:6.

Legs: Short. Femora moderately thickened towards the second third. Pro- and mesotibiae slightly bent, metatibiae somewhat more bent. Lengths of protarsomeres 1–5 as 5:4:4:3:12, lengths of mesotarsomeres 1–5 as 7:5:4½:4:12, lengths of metatarsomeres 1–4 as 25:11:6:12.

Aedeagus: See Fig. 30F–H.

Amarygmus seductus **n. sp.**
(Fig. 31A–E)

Holotype (♀): Sarawak, Gunung Mulu Nat. Park, Site Camp 2.5, Mulu, 1000 m, 413481, Lower I., montane f., MV-understorey, R. G. S. Exped. 1977-8, 15 February, J. D. Holloway et al., B. M. 1978-206 (BMNH).

Etymology

Seductus (Lat.) = remote.

Diagnosis

Of medium size, somewhat elongate oval. Elytra with rows of medium-sized, mostly rhombic punctures which are situated in some distance on disc; intervals flat, with tiny, distinct punctures. Frons of medium width. Antennae of medium length. Legs short, tibiae thin. Upperside brown with a distinct pink tinge.

Amarygmus seductus n. sp. has some similarity to *A. nepenthes* n. sp. and *A. botryitidis* n. sp.; see under diagnoses of these species.

Description

Measurements: Body length 6.29 mm; body width 3.74 mm. – Ratios: Pronotum: width/length 1.80; width hind corners/width front corners 1.85. Elytra: length/width 1.43; length elytra/length pronotum 3.35; maximum width elytra/maximum width pronotum 1.31.

Colouration: Elytra and pronotum brown with a strong pink tinge, pronotum additionally with a weak iridescence. Legs dark brown. Antennomeres 1–5 brown, 6–11 black. Underside brown, lustrous (holotype immature).

Head: Frons of medium width, as wide as combined length of antennomeres 3+4. Genae negligibly raised, anteriorly terminating anterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture translucent, neither depressed nor incised. Clypeus moderately

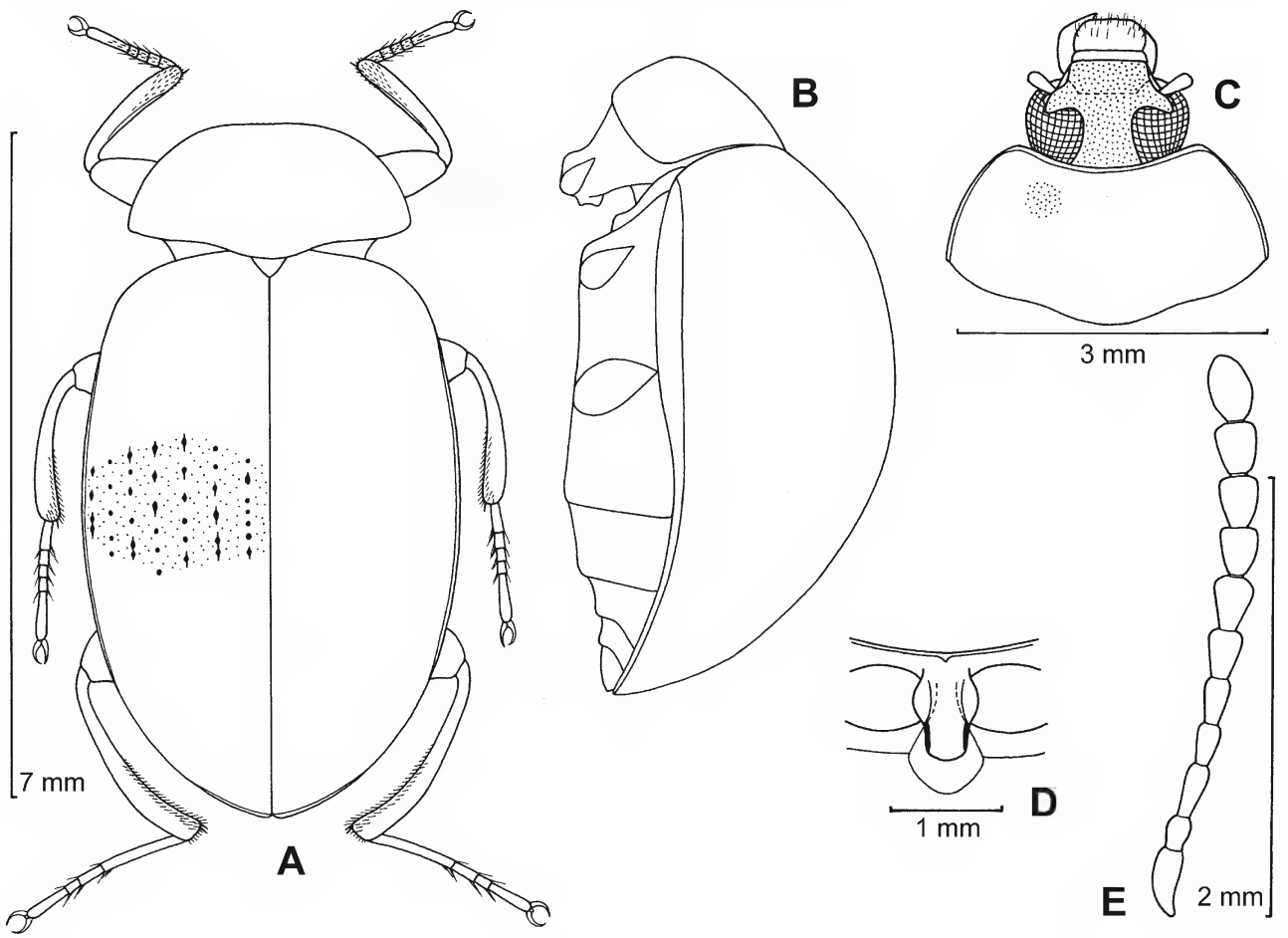

Fig. 31. *Amarygmus seductus* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

stretched forwards, scarcely convex. Frons and clypeus closely covered with tiny punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Relatively short, moderately convex transversely, slightly convex longitudinally. Widest at base, sides bent and converging towards front corners. Hind corners angular, obtuse; front corners rounded. Anterior margin moderately excavated. Lateral and anterior margins bordered. Lateral borders in dorsal view narrowly visible. Front and hind corners in lateral view obtuse, front corners rounded, hind corners angular. Surface with small, irregularly but mostly closely set punctures.

Scutellum: Triangular, impunctate.

Elytra: Somewhat elongate oval, markedly convex transversely, moderately convex longitudinally. Maximum width and height approximately in the middle. Shoulders slightly prominent. Apices of elytra mutually rounded. Lateral edges in dorsal view narrowly visible posterior to shoulders. With rows of relatively large, somewhat irregularly set, mostly rhombic punctures; distance between punctures on disc in row 4 about 1–3 times diameter of a puncture, punctures in rows 2 and 3 are more widely separated; about 19 punctures in row 4. Intervals flat, with minute, distinct, not very closely set punctures.

Prosternum: Anterior margin continuously and narrowly bent upwards. Apophysis not very wide; along procoxae lateral margins somewhat widened, with a median groove in between; posterior to procoxae sides subparallel and lateral margins somewhat lifted upwards; apically broadly rounded.

Mesosternum: Anterior margin of the posterior part deeply excavated in the middle. Lateral margins subparallel, slightly lifted.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Disc with a few medium-sized punctures anteriorly, widely separated minute punctures posteriorly. Median line translucent, neither incised nor depressed.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Discs of sternites with minute, widely separated punctures.

Antennae: Relatively short, reaching to anterior fourth of elytra. Length/width ratio of antennomeres 1–11 equals to 7:3 / 3:2½ / 7:2½ / 4½:2½ / 5:3 / 5:4 / 6:4½ / 6:4½ / 5½:4½ / 5:4½ / 7:5.

Legs: Short. Femora thickened towards the second third. Protibiae very slightly bent, mesotibiae slightly bent, metatibiae clearly bent. Lengths of protarsomeres 1–5 as 7:6:6:5:22, lengths of mesotarsomeres 1–5 as 13:6:5:5:24, lengths of metatarsomeres 1–4 as 39:12:8:22.

Amarygmus semotus **n. sp.**
(Fig. 32A–E)

Holotype (♀): Borneo, Sabah, Danum Valley [primary lowland rainforest], 4°38'N 117°48'E, M. D. F. Ellwood, *Parashorea tomentella*, *Asplenium nidus*, Tembaling 2, FogTray 4, 19.X.1999, 446 (BMNH).

Etymology

Semotus (Lat.) = segregated from.

Diagnosis

Of medium size, oval, very convex transversely. Elytra with rows of very closely set punctures and flat intervals. Frons of medium width. Antennae short. Elytra dark coppery with narrow brighter stripes along the puncture rows. Metatarsomere 4 as long as metatarsomere 1.

Amarygmus semotus n. sp. is very similar in shape to *A. katoi* Masumoto, 1985 (see Masumoto 1985: 11–12, figs. 23–25; also described and illustrated as *A. maiusculus* by Bremer 2004a: 47–48, fig. 29). *A. katoi* is somewhat larger (8.92–9.47 mm) and may also have narrow stripes on the elytra, but in this case the striae are brighter (not the puncture rows as in *A. semotus*).

Description

Measurements: Body length 7.56 mm; body width 4.78 mm. – Ratios: Pronotum: width/length 2.22; width hind corners/width front corners 1.79. Elytra: length/width 1.32; length elytra/length pronotum 3.59; maximum width elytra/maximum width pronotum 1.40.

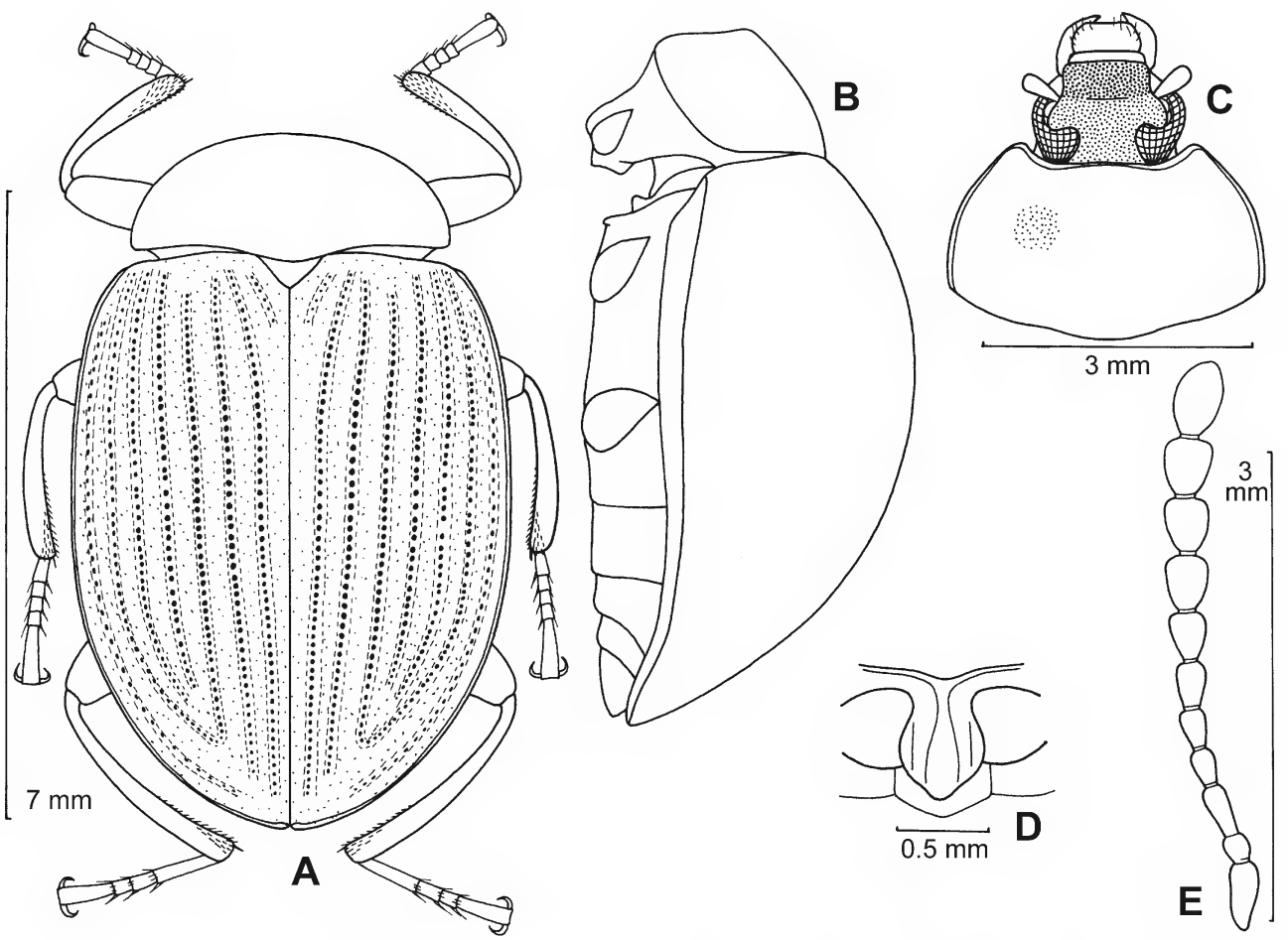

Fig. 32. *Amarygmus semotus* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

Colouration: Frons and pronotum dark green, lustrous. Elytra dark coppery, somewhat less lustrous than pronotum, with narrow brighter stripes along rows of punctures. Legs including tarsi black. Antennomeres 1+2 brown, 3–11 black. Underside black, with reduced lustre.

Head: Frons of medium width, wider than combined length of antennomeres 3+4 (like 16 : 14½), slightly convex longitudinally. Genae distinctly raised, anteriorly terminating somewhat anterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture markedly depressed, slightly incised in its middle part. Clypeus stretched forwards, slightly convex longitudinally. Clypeus and frons with small, indistinct, closely set punctures. Mentum reversely trapezoidal; lateral margins lustrous, flat, space in between convex transversely, opaque. Underside of neck with small, closely set punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

Pronotum: Convex transversely, somewhat less convex longitudinally. Widest at base; sides bent, narrowing towards front corners. Hind corners in dorsal view angular but very obtuse; front corners narrowly rounded and approximately rectangular. Anterior margin excavated. Lateral and anterior margins bordered. Lateral borders in dorsal view visible in the posterior four-fifths, barely visible anteriorly. Front corners in lateral view narrowly rounded, with an angle of about 100°; hind corners angular, markedly obtuse. Surface with small, distinct, irregularly set punctures.

Scutellum: Triangular, with some tiny punctures.

Elytra: Oval, markedly convex transversely and longitudinally. Widest and highest approximately in the middle. Shoulders slightly prominent. Apices of elytra mutually rounded. Lateral edges narrowly visible on the whole length in dorsal view. With rows of medium-sized, closely set punctures; distance between punctures equal to the diameter of a puncture; about 38 punctures in row 4. Intervals flat, posterolaterally slightly convex, with indistinct, tiny punctures (just visible at 50-fold magnification).

Prosternum: Anterior margin narrowly bent upwards, in the middle with a small keel pointing to apophysis. Apophysis oval, maximum width slightly behind procoxae, with a shallow, median keel posterior to procoxae.

Mesosternum: Anterior margin of the posterior part with a narrow excavation in the middle, front corners of this excavation with a large tubercle.

Metasternum: Anterior margin between mesocoxae rounded, bordered. Anterior part of disc with large, closely set punctures, posterior part with a few tiny punctures. Median line somewhat depressed and incised.

Sternites: Anterior margin of sternite 1 between metacoxae widely ogival, bordered. Sternites with minute, widely separated punctures.

Antennae: Short, reaching to anterior fifth of elytra. Length/width ratio of antennomeres 1–11 equals to 9:5 / 5:4 / 8½:4 / 6:4 / 7:4½ / 6½:5 / 8:7 / 8:7½ / 9:8 / 9:8 / 12:8.

Legs: Femora widened towards the second third, narrowing apically. All tibiae somewhat thickened and bent anteriorly. Lengths of protarsomeres 1–5 as 5:4½:3:3:14, lengths of mesotarsomeres 1–5 as 6:4:4:4:14, lengths of metatarsomeres 1–4 as 14:7:4:14.

Amarygmus seponens **n. sp.**
(Fig. 33A–H)

Holotype (♂): Indonesia, Kalimantan, Bukit Bangkirai near Balikpapan, Light Trap, 4.I.2000, H. MAKIHARA leg. [left protarsomeres 4–5, right protarsomeres, right mesotarsomeres, and both metatarsomeres missing] (CA).

Etymology

Seponens (Lat.) from seponere = to put aside.

Diagnosis

Of medium size, ovate. Elytra closely punctured, with rows of large, irregularly formed punctures (elongate, striolate or round) with a violet bottom and a small violet halo. Mesotibiae on inner side with a sharp edge which terminates in a sharp tooth-like corner at about basal three-fifths.

Amarygmus seponens n. sp. resembles *A. sundaensis* Bremer, 2001 (redescribed and illustrated by BREMER 2004a: 38–39, fig. 22) which also has specially formed male mesotibiae, but *A. sundaensis* has a widening in the middle of the mesotibiae (not a sharp edge which terminates in a sharp corner as in *A. seponens*).

A similar excavation with a sharp corner on inner side of mesotibiae and a similar size, shape and widening of protarsomeres 1–3 is also present in males of *A. oeneus* Bremer, 2009 (from Luzon/Philippines, see BREMER 2009: 282–283). However, *A. oeneus* has only striae on the elytra, it has no close punctation on the elytral intervals and no violet bottom or haloes around the elytral punctures.

Description

Measurements: Body length 5.97 mm; body width 3.74 mm. – Ratios: Pronotum: width/length 1.92; width hind corners/width front corners 1.92. Elytra: length/width 1.35; length elytra/length pronotum 3.53; maximum width elytra/maximum width pronotum 1.36.

Colouration: Upperside somewhat opaque, coppery. Pronotum with weak violet and green reflections. Elytra with faint violet, yellow and green reflections, punctures of rows with a violet bottom and a narrow violet halo. Frons faintly violet, clypeus weakly green. Antennae dark brown to black. Femora dark brown. Underside black, metasternum lustrous, sternites microreticulated, somewhat opaque.

Head: Frons narrow, approximately as wide as length of antennomere 2, with small, distinct, not very closely set punctures. Genae slightly raised, anteriorly terminating

anterior to the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture somewhat depressed and incised in the middle, very weakly incised laterally. Clypeus moderately stretched forwards, somewhat convex transversely and longitudinally, its punctures larger and closer set than those of frons. Mentum reversely trapezoidal; lateral margins flat, lustrous, space in between slightly opaque, moderately convex transversely. Mandibles sulcated on outer surface; apically bifid.

P r o n o t u m : Moderately convex transversely and longitudinally. Widest at base, anteriorly narrowing and bent. Hind corners angular, slightly obtuse; front corners rounded. Anterior margin moderately excavated. Lateral and anterior margins continuously bordered. Lateral margins in dorsal view narrowly visible. Front and hind corners in lateral view slightly obtuse, front corners rounded, hind corners angular. Surface with small, distinct, closely set punctures; a narrow median area nearly impunctate.

S c u t e l l u m : Triangular, with a few small, distinct punctures.

E l y t r a : Oval, markedly convex transversely, somewhat less so longitudinally. Maximum height near the middle. Shoulders rounded, slightly prominent dorsad. Apices of elytra mutually rounded. Lateral edges narrowly visible on the whole length in dorsal view. With rows of large punctures of very different shape, some are round and well separated, some are elongate and fused to a depressed stria; all punctures with a violet bottom, if several punctures are fused to a stria the whole stria is circumvented by a violet halo. Intervals with a slight tendency to convexity (because of the somewhat depressed striae), with small, distinct, relatively closely set punctures.

P r o s t e r n u m : Anterior margin continuously and narrowly bent upwards. Apophysis slightly ascending between anterior margin and level between procoxae, slightly descending between procoxae and apex; along procoxae lateral margins somewhat widened and raised, space in between with a median groove; posterior to procoxae lateral margins slightly narrowing and narrowly raised; apex rounded; surface opaque.

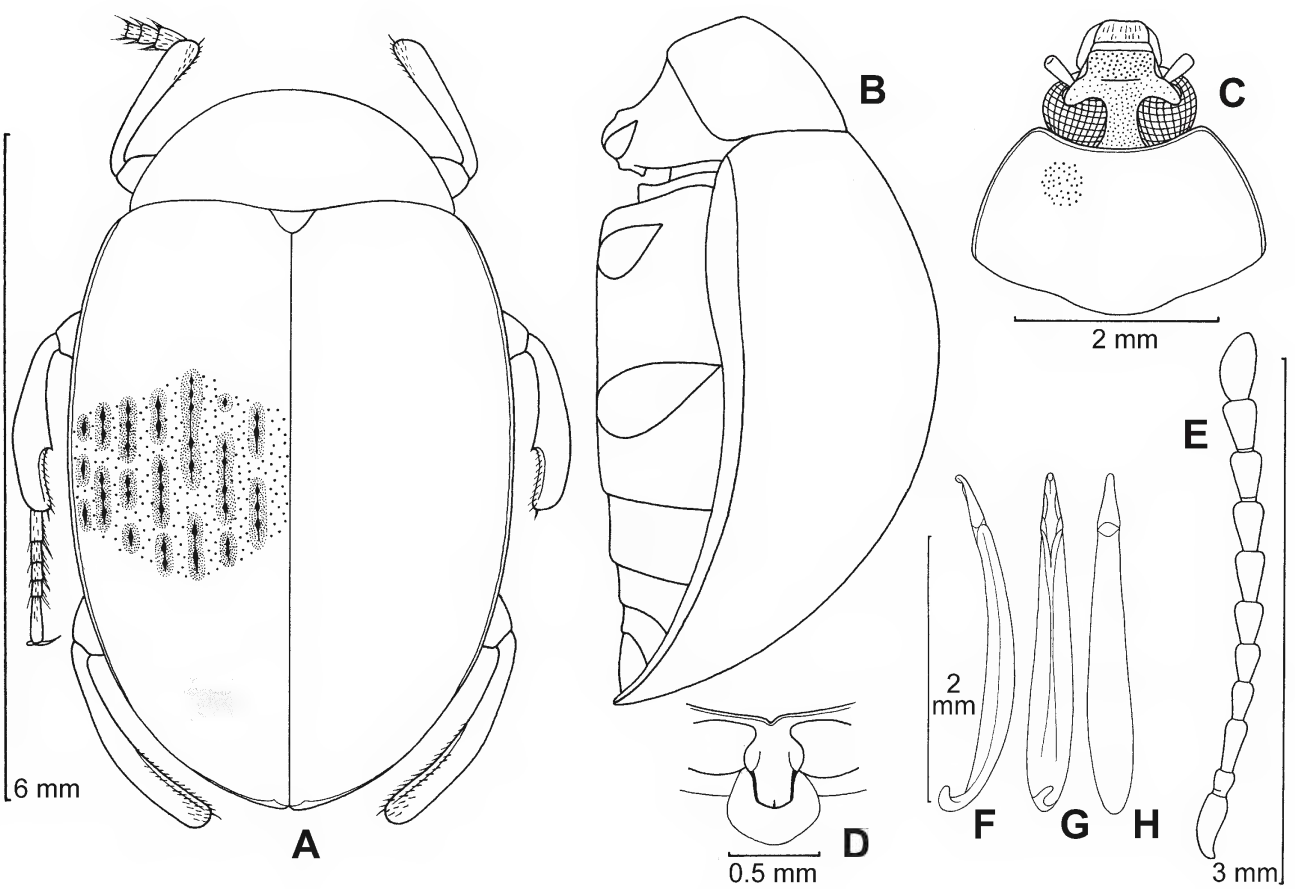

Fig. 33. *Amarygmus seponens* n. sp. – **A** Habitus, ♂. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna. **F** Aedeagus, lateral view. **G** Aedeagus, ventral view. **H** Aedeagus, dorsal view.

Mesosternum: Posterior part relatively narrow, with subparallel and slightly raised lateral margins; anterior margin excavated in the middle.

Metasternum: Anterior margin between mesocoxae rounded, faintly bordered. Anterior apophysis somewhat lifted like a bump (only in males?). Anterior part of disc with not very closely set, medium-sized punctures, small punctures along the distinctly depressed median line, and tiny punctures laterally.

Sternites: Anterior margin of sternite 1 between metacoxae ogival, bordered. Sternites with minute, not very closely set punctures. Disc of sternite 5 flattened.

Antennae: Of medium length, reaching to anterior third of elytra. Length/width ratio of antennomeres 1–11 equals to 12:7 / 8:7 / 15:6 / 10:6 / 12:7 / 12:7 / 14:9 / 15:9 / 15:9½ / 14:10 / 19:10.

Legs: Short. Femora distinctly thickened towards the second third. Protibiae slightly bent. Mesotibiae clearly bent on outer side, nearly straight on inner basal three-fifths, terminating in a small, sharp tooth, distal to this tooth somewhat excavated on inner side. Metatibiae markedly bent. Protarsomeres 1–3 moderately widened and with a brush-like pilosity on soles. Lengths of protarsomeres 1–3 as 8:6:4, lengths of mesotarsomeres 1–5 as 12:10:6:4:21.

Aedeagus: See Fig. 33F–H.

Amarygmus zynthiae **n. sp.**
(Fig. 34A–E)

Holotype (♀): Borneo, Sabah, vic. Danum Valley Rainforest Lodge, 4°58'N 117°48'E, primärer Tiefland-Regenwald [= primary lowland rainforest], nachts, auf Baumrinde [= at night, on bark of a tree], 19.–20.X.2009, leg. U. & H. J. Bremer (ZSMB).

Etymology

Zynthia (also Cynthia) = female first name and also name of a severe storm which crossed Germany when I was describing this species.

Diagnosis

Of medium size, oval. Elytra with distinctly incised striae and rhombic strial punctures; intervals markedly convex. Pronotum with bent sides and maximum width somewhat posterior to the middle, hind corners rounded. Frons relatively narrow. Antennae of medium length. Prosternal apophysis and mesosternum with medium-sized, non-directional hairs. Upperside uniformly copper coloured and lustrous, femora and tibiae dark brown.

The body shape of *Amarygmus zynthiae* n. sp., the shape of the prosternal apophysis and the relatively long hairs on prosternal apophysis and mesosternum are characters of the species group near *A. postdepressus* Pic, 1937 (redescribed and illustrated by Bremer 2004a: 29–31, fig. 16). Males of *A. postdepressus* have long hairs on front of profemora and back of mesofemora, and long, very closely set hairs on prosternal apophysis and hind part of mesosternum. Females of this species group have no long hairs on the femora, but medium-sized hairs on prosternal apophysis and mesosternum (less closely set than in males). Only the female holotype is known of *A. zynthiae*, but I strongly suppose that the male will have similar hairs on femora, prosternal apophysis and mesosternum as in *A. postdepressus*.

In size, shape and the widely rounded hind corners of the pronotum *A. zynthiae* also resembles *A. disgregatus* Bremer, 2010 (Bremer 2010a: 184–187). However, *A. disgregatus* has a dark violet colour on the lateral parts of the elytra, and the pronotal sides are less retracted towards the hind corners.

A. zynthiae n. sp. is also similar to *A. amoenus* n. sp. from the same locality; both species have a lustrous upperside with markedly convex elytral intervals. *A. amoenus*, however, has a narrower body, the maximum elytral width and height is near the middle, the punctures of the elytral rows are small and scarcely visible (much larger in *A. zynthiae*), the maximum pronotal width is near the base (just behind the middle in *A. zynthiae*), and the frons is distinctly wider. Males of *A. amoenus* do not have long hairs on pro- and mesofemora and prosternal apophysis and mesosternum, thus this species does not belong to the species group of *A. postdepressus* Pic.

Description

Measurements: Body length 5.17 mm; body width 3.74 mm. – Ratios: Pronotum: width/length 1.97; width hind corners/width front corners 1.76. Elytra: length/width 1.22; length elytra/length pronotum 3.44; maximum width elytra/maximum width pronotum 1.43.

Colouration: Upperside except scutellum coppery, lustrous; scutellum brown. Underside brown. Legs dark brown. Antennomeres 1–4 dark brown, 5–11 black.

Head: Frons relatively narrow, somewhat narrower than length of antennomere 4 (like 11 : 15), with minute, not very closely set punctures. Genae raised, anteriorly terminating approximately at the level of the middle part of the fronto-clypeal suture. Fronto-clypeal suture clearly incised in its middle part and somewhat depressed, slightly incised laterally. Clypeus stretched forwards, slightly convex transversely and longitudinally, with minute, not very closely set punctures; tiny hairs originating from these punctures. Mentum reversely trapezoidal, with somewhat bent sides; lateral margins flat, lustrous, space in between opaque, slightly convex transversely, with a few medium-sized hairs. Underside of neck with large, shallow, partially fused punctures. Mandibles with a longitudinal sulcus on outer surface, apically bifid.

P r o n o t u m : Slightly convex transversely and longitudinally. Maximum width somewhat posterior to the middle, anteriorly narrowing with straight margins, posteriorly narrowing with rounded margins. Hind corners rounded; front corners rectangular and somewhat prominent. Anterior margin distinctly excavated. Lateral and anterior margins continuously bordered. Lateral borders in dorsal view narrowly visible. Front corners in lateral view rectangular; hind corners angular and obtuse. Surface with tiny, not very closely set punctures.

S c u t e l l u m : Triangular, impunctate.

E l y t r a : Ovate, relatively wide, convex transversely and longitudinally. Maximum width and height at the end of the first third. Shoulders obtuse. Apices of elytra mutually rounded. Lateral edges, except at shoulders, narrowly visible in dorsal view. With incised striae with medium-sized, elongate punctures; distance between punctures on disc in stria 4 approximately ½–1 times diameter of a puncture. Intervals convex, with tiny, distinct, widely separated punctures.

P r o s t e r n u m : Anterior margin continuously and narrowly bent upwards. Apophysis nearly pentagonal, along procoxae with moderately widened and uplifted lateral margins, space in between with a wide, shallow median groove; covered with non-directional hairs of medium length.

M e s o s t e r n u m : Posterior part wide and short, its anterior margin excavated in the middle. Surface covered with medium-sized, non-directional hairs.

M e t a s t e r n u m : Anterior margin between mesocoxae convex, bordered. Anterior part of disc with large, closely set punctures which are the origin of short, nearly recumbent hairs; posterior part nearly impunctate. Median line moderately incised in the posterior two-thirds.

S t e r n i t e s : Anterior margin of sternite 1 between metacoxae ogival, bordered. Sternites impunctate (at 50-fold magnification), with a few short, recumbent hairs.

A n t e n n a e : Reaching to middle of elytra. Length/width ratio of antennomeres 1–11 equals to 17:7 / 7:6 / 19:5½ / 15:5½ / 16:5½ / 15:6 / 17:9 / 16:9 / 16:9½ / 16:9½ / 21:9½.

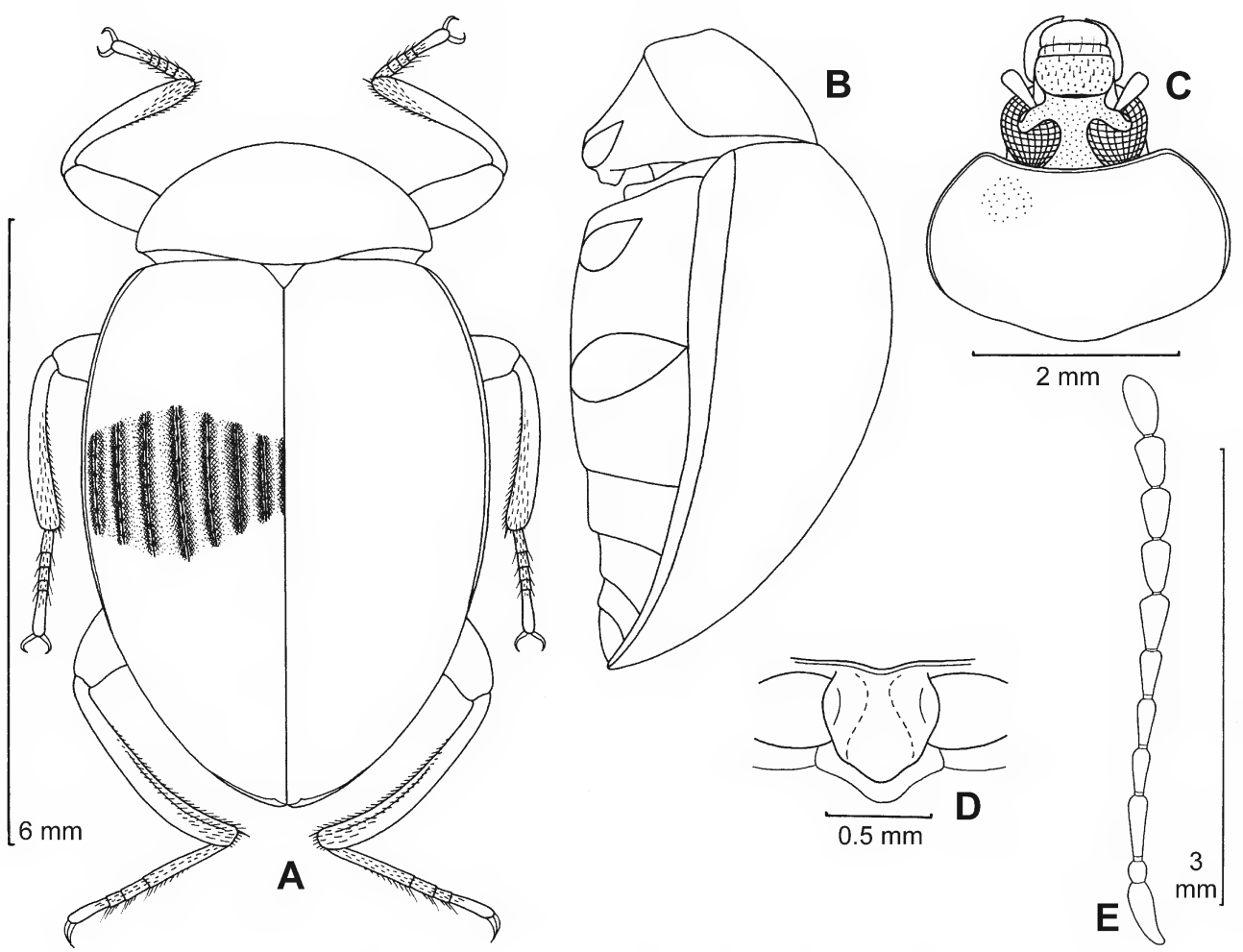

Fig. 34. *Amarygmus zynthiae* n. sp. – **A** Habitus, ♀. **B** Body, lateral view. **C** Head and pronotum. **D** Prosternal apophysis. **E** Antenna.

L e g s : Of medium length. Femora thickened towards the second third, narrowing towards apex. Pro- and mesotibiae slightly bent; metatibiae slightly bent in the basal three-fifths, somewhat more incurved in the apical two-fifths. Lengths of protarsomeres 1–5 as 4:4:4:4:22, lengths of mesotarsomeres 1–5 as 10:8:8:6:22, lengths of metatarsomeres 1–4 as 36:10:6:22.

4 Notes on *Amarygmus verecundus* Bremer, 2010

Amarygmus verecundus was described by Bremer (2010a: 242–243), based on three female specimens. In the meantime I could study a male specimen. It has slightly widened protarsomeres 1–3 and the aedeagus with a barbed hook on the top dorsally (Fig. 35A–C). This species therefore belongs to the species group of *A. fulgurans* Gebien, 1927, which includes *A. eureos* Bremer, 2010, *A. erilis* Bremer, 2010, *A. inconditus* Bremer, 2010, and probably also *A. tenellus* Bremer, 2003 as additional members. All these species have a similar shape of the aedeagus. Only females are known of *A. tenellus*, but because this species has a very similar shape as *A. fulgurans*, I guess that also males of *A. tenellus* might have an aedeagus with barbed hook.

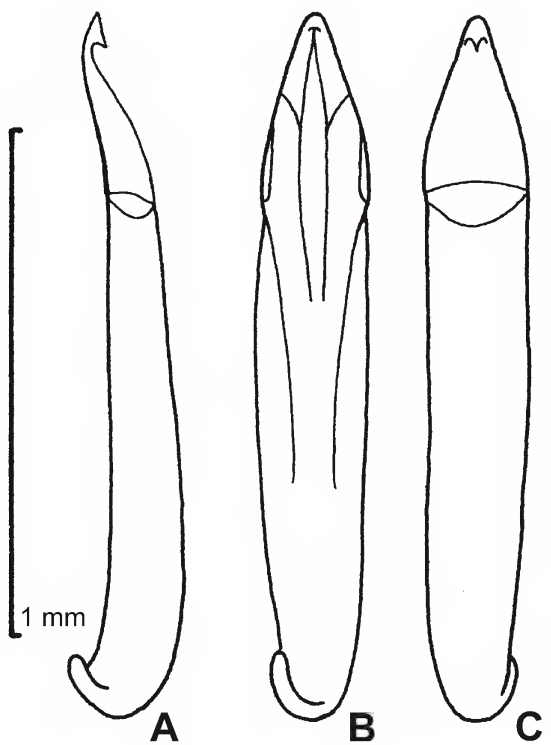

Fig. 35. *Amarygmus verecundus* Bremer, 2010. – **A** Aedeagus, lateral view. **B** Aedeagus, ventral view. **C** Aedeagus, dorsal view.

5 References

Bremer, H. J. (2002a): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen. VII. Kleine *Amarygmus*-Arten aus der orientalischen Region ohne Makeln auf den Flügeldecken (Insecta, Coleoptera, Tenebrionidae, Amarygmini). – Spixiana **25**: 1–58.

Bremer, H. J. (2002b): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen. XII. Die *Amarygmus*-Arten der orientalischen Region mit Makeln auf Flügeldecken (Coleoptera; Tenebrionidae; Amarygmini). 1. Mitteilung. – Acta Coleopterologica **18** (2): 3–36.

Bremer, H. J. (2003a): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen. Teil XVI. Erste Mitteilung über lang gestreckte Arten aus der orientalischen Region: Nachbeschreibungen und Abbildungen beschriebener Arten sowie Neubeschreibungen (Coleoptera: Tenebrionidae; Amarygmini). – Annales historico-naturales Musei nationalis hungarici **95**: 37–105.

Bremer, H. J. (2003b): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen. XIX. Anmerkungen, Nachbeschreibungen, Neubeschreibungen und Illustrationen von *Amarygmus*-Arten der orientalischen Region (Coleoptera; Tenebrionidae; Amarygmini). – Acta Coleopterologica **19** (2): 45–79.

Bremer, H. J. (2004a): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen. XXI. Nachbeschreibungen, Neubeschreibungen und Illustrationen von *Amarygmus*-Arten der orientalischen Region (Coleoptera; Tenebrionidae; Amarygmini). – Acta Coleopterologica **20** (1): 7–86.

Bremer, H. J. (2004b): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen. XXII. Neue *Amarygmus*-Arten aus der orientalischen Region überwiegend nahe *Amarygmus mesotibialis* Bremer, 2003 (Coleoptera, Tenebrionidae, Amarygmini). – Entomofauna **25**: 133–156.

Bremer, H. J. (2004c): Revision der Gattung *Amarygmus* Dalman, 1823 und verwandter Gattungen. XXV. Neue *Amarygmus*-Arten aus der orientalischen Region und ein neuer Status eines von Pic beschriebenen Taxon (Coleoptera: Tenebrionidae, Amarygmini). – Mitteilungen der Münchner entomologischen Gesellschaft **94**: 103–130.

Bremer, H. J. (2005a): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen. XXVIII. Angaben zu *Amarygmus*-Arten, die von Fabricius, Weber, Wiedemann, Hope und Pascoe beschrieben wurden (Insecta, Coleoptera, Tenebrionidae, Amarygmini). – Spixiana **28**: 41–89.

Bremer, H. J. (2005b): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen. XXXIII. Die *Amarygmus*-Arten der orientalischen Region mit Makeln auf Flügeldecken. 2. Mitteilung (Coleoptera; Tenebrionidae; Amarygmini). – Acta Coleopterologica **21** (2): 9–50.

Bremer, H. J. (2006a): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen. XXXII. Nachbeschreibungen von *Amarygmus maunieri* Pic, 1924 und Beschreibung verwandter und neuer Arten (Coleoptera: Tenebrionidae, Amarygmini). – Entomofauna **27**: 1–36.

Bremer, H. J. (2006b): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen. XL. Über kleine *Amarygmus*-Arten mit extrem schmaler Stirn und über einige *Amarygmus*-Arten aus der papuanischen Region (Coleoptera; Tenebrionidae; Amarygmini). – Acta Coleopterologica **22** (1): 14–34.

Bremer, H. J. (2007): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen (Coleoptera: Te-

nebrionidae: Amarygmini). XLV. Neu- und Nachbeschreibungen von *Amarygmus*-Arten der orientalischen Region. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **707**: 48 pp.

BREMER, H. J. (2009): Revision der Gattung *Amarygmus* Dalman, 1823 sowie verwandter Gattungen (Coleoptera: Tenebrionidae: Amarygmini). LI. Die Amarygmini der Philippinen. – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **2**: 241–346.

BREMER, H. J. (2010a): Revision of the genus *Amarygmus* Dalman and related genera. LVI. The Amarygmini of Borneo (Coleoptera: Tenebrinidae), part I. – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **3**: 139–256.

BREMER, H. J. (2010b): Revision of the genus *Amarygmus* Dalman and related genera. LVII. New species of *Amarygmus*, *Cephalamarygmus* and *Sylvanoplonyx* from the Malayan Peninsula and Sumatra. With checklist of the species of the genera *Amarygmus*, *Cephalamarygmus*, *Cerysia*, *Sylvanoplonyx* and *Plesiophthalmus* of the Malayan Peninsula and Sumatra. – Mitteilungen der Münchner entomologischen Gesellschaft **100**: 31–96.

MASUMOTO, K. (1985): Tenebrionidae of East Asia. I. Tenebrionid beetles from South Sumatra collected by Mr. HIROSHI MAKIHARA in 1983. – Elytra **13**: 1–18.

MASUMOTO, K. & MAKIHARA, H. (1997): Study on the tenebrionid beetles in South Sumatra. – Bulletin of the Forestry and Forest Products Research Institute **374**: 115–153.

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New and little known species of Tenebrionidae (Coleoptera) from Borneo (2)

Roland Grimm

Abstract

The following new tenebrionid species are described: *Camptobrachys sarawakensis* **n. sp.** (East Malaysia/Sarawak), *Gonocephalum tibiale* **n. sp.** (Indonesia/Kalimantan), *G. tuberipenne* **n. sp.** (East Malaysia/Sabah), *Promethis martinii* **n. sp.** (East Malaysia/Sabah), and *Zypoetes borneensis* **n. sp.** (East Malaysia/Sarawak). *Bremerianus baehri* Masumoto & Bečvář, 2005 and *Micropedinus inconstans* (Lea, 1917) are reported for the first time from Borneo. New records of *Catapiestus mediocris* Guérin-Méneville, 1841, *Diphyrrhynchus latitarsus* Chûjô, 1973, and *Taiwanocryphaeus erberi* Schawaller, 2005 are given.

Keywords: Tenebrionidae, Borneo, Malaysia, Sabah, Sarawak, Lupropini, Phrenapatini, Opatrini, Cnodalonini, Stenochiini, new species, new records.

Zusammenfassung

Die folgenden neuen Tenebrioniden-Arten werden beschrieben: *Camptobrachys sarawakensis* **n. sp.** (Ost-Malaysia/Sarawak), *Gonocephalum tibiale* **n. sp.** (Indonesia/Kalimantan), *G. tuberipenne* **n. sp.** (Ost-Malaysia/Sabah), *Promethis martinii* **n. sp.** (Ost-Malaysia/Sabah) und *Zypoetes borneensis* **n. sp.** (Ost-Malaysia/Sarawak). *Bremerianus baehri* Masumoto & Bečvář, 2005 und *Micropedinus inconstans* (Lea, 1917) werden erstmals für Borneo nachgewiesen. Neue Funde von *Catapiestus mediocris* Guérin-Méneville, 1841, *Diphyrrhynchus latitarsus* Chûjô, 1973 und *Taiwanocryphaeus erberi* Schawaller, 2005 werden mitgeteilt.

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1 Introduction

As already noted in the first part of "New and little known species of Tenebrionidae from Borneo" (Grimm 2010), the species inventory of the Tenebrionidae of this island is far from complete. The present second part treats mainly material from own fieldwork, supplemented by material from fogging samples of Dr. Andreas Floren (Würzburg), from light captures of Karl Martini (Ingolstadt), and material deposited in SMNS. Specimens from several collections (see list below) were used for comparison.

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Acronyms of depositories

CAF	Collection Dr. Andreas Floren, University of Würzburg, Germany
CRG	Collection Dr. Roland Grimm, Tübingen, Germany
ELKUF	Entomological Laboratory Kyushu University, Fukuoka, Japan (Dr. Satoshi Kamitani, Dr. Osamu Tadauchi)
HNHM	Hungarian Natural History Museum, Budapest, Hungary (Dr. Ottó Merkl)
NHMB-F	Naturhistorisches Museum Basel, Collection Frey, Switzerland (Dr. Eva Sprecher)
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany (Dr. Wolfgang Schawaller)
ZSM	Zoologische Staatssammlung, München, Germany (Dr. Michael Balke)

2 The species

2.1 Lagriinae Latreille, 1825

Lupropini Ardoin, 1958

Micropedinus inconstans (Lea, 1917)

Material studied

Borneo, Malaysia, Sabah, Sikuati-Beach, 17.V.2005, R. Grimm leg., 2 specimens (CRG).

Distribution

Australia: Western Australia, Queensland (Matthews & Bouchard 2008). Borneo (new record). W Malaysia, Philippines: Leyte, Indonesia: West Papua [Irian Jaya], (based on specimens in CRG, SMNS and ZSM).

2.2 Phrenapatinae Solier, 1834

Phrenapatini Solier, 1834

Zypoetes borneensis **n. sp.**
(Fig. 6)

Holotype (sex not examined): Borneo, Malaysia, Sarawak, Gunung Gading Nat. Park, 100–250 m, 20.III.2008, R. Grimm leg. (CRG).

Paratype: Same data as holotype, 1 specimen (CRG).

Etymology

Named after Borneo, where the types were collected.

Description

Oval, blackish, anterior quarter of head, margins of pronotum, a broader part behind anterior margin of pronotum, appendages, lateral margins of elytra and ventral side fulvous; apex of mandibles black; body (except eyes, antennae, maxillary and labial palps, base of femora, tibiae and tarsi) covered by greyish yellow lacquer-like layer, thus appearing pale yellowish. Body length 2.05 mm, body width 1.05 mm.

Head subrectangular; eyes small and round, not protruding beyond vault of head; lateral margins of genae subparallel, anterior margins of genae and clypeus forming common straight anterior margin of head. Clypeal suture distinct. Clypeus with fine scattered punctures; rest of head with very large, coarse, laterally partly confluent punctures. Antennae short, last three antennomeres forming a distinct club. Ventral side with deep antennal groove. Terminal maxillary palpomere parallel-sided with apex obliquely truncated. Mentum subrectangular, flat; apex of mandibles ending with acute tooth.

Pronotum transverse, width/length ratio (both measured in the middle) 1.7, widest at base; anterior and posterior border finely, lateral borders sharply margined; posterior border slightly arcuate, lateral borders feebly arcuate anteriad, anterior border shallowly bisinuate; anterior angles subrectangular, somewhat protruding beyond anterior border; posterior angles weakly obtuse. Surface slightly convex, disc laterally with coarse scattered punctures, denser and sometimes confluently punctured in posterolateral part, fronto-medially rugulose. Middle of prosternum in front of coxae convex; prosternal process flat, extending behind coxae, apex broadly rounded. Propleura microreticulate, laterally with some punctures. Metaventrite densely punctured with large, umbilicate, setigerous punctures laterally.

Elytra oval with eight rows of punctures, the seventh row hardly discernible; intervals broader than rows, feebly convex, finely scattered punctate. Lateral margin in dorsal view only visible near base. Abdominal ventrites I–IV microreticulate in middle, laterally punctured with large, umbilicate, setigerous punctures, last ventrite sparsely punctured.

Legs short; femora compressed laterally, apices not protruding beyond lateral borders of body; tibiae compressed laterally, protibiae triangular; mesotibiae and metatibiae subtriangular, metatibiae slightly curved; tarsi short.

Differential diagnosis

Zypoetes borneensis n. sp. can be separated from the New Guinean species *Z. paradoxus* Kaszab, 1977 by the less oval body shape, the elytra which are more parallel-sided in their anterior part, the denser and distinctly coarser punctation on head and pronotum, and the lateral margins of the elytra which are only visible near base in dorsal view (in *Z. paradoxus* visible in anterior quarter).

2.3 Tenebrioninae Latreille, 1802

Toxicini Lacordaire, 1859

Taiwanocryphaeus erberi Schawaller, 2005

Material studied

Borneo, Malaysia, Sabah, Kinabalu Park, 6°5'N 116°33'E, Lowland mixed Dipterocarp Forest, B1, B2 Mix, 27.III.1998, A. Floren leg., 1 ♀ (CAF). – Borneo, Malaysia, Sabah, near Keningau, 20 years *Melanolepis* sp., B3, 18.II.2001, A. Floren leg., 1 ♀ (CRG).

Remarks

Taiwanocryphaeus erberi Schawaller, 2005 was only known by males from Sumatra (Schawaller 2005) and Sarawak (Grimm 2010). Fogging trees in Sabah by A. Floren (Würzburg) for the first time yielded females, which are characterized by lacking the finger-like horn on the frons and the tooth-like anterior corner of the genae.

Distribution

Sumatra, Borneo (Sabah, Sarawak).

Opatrini Brullé, 1832

Diphyrrhynchus latitarsus Chûjô, 1973 (Fig. 7)

Type material studied

Borneo, Brunei, Muara sea-shore, 29.I.1962, T. Kira leg., holotype, 2 paratypes (ELKUF).

Additional material studied

Borneo, Malaysia, Sabah, W Kudat, Sikuati-Beach, 23.I.2010, R. Grimm leg., 2 ♂♂, 3 ♀♀ (CRG). – Borneo, Malaysia, Sabah, Tip of Borneo vic., 22.–23.I.2010, R. Grimm leg., 22 ♂♂, 9 ♀♀ (CRG). – Borneo, Sarawak, Kuching, Santubong, 8.–9.III.1990, A. Riedel leg., 6 specimens (SMNS).

Distribution

Borneo: East Malaysia (Sarawak, Sabah), Brunei. W Malaysia: Tioman Island (new record based on specimen in SMNS).

Remarks

Diphyrrhynchus latitarsus Chûjô 1973 is very similar to *D. caledonicus* Bates, 1872 and *D. semisulcatus* Gebien, 1920. As indicated by Chûjô (1973), *D. latitarsus* can be separated from *D. caledonicus* by the denser punctured dorsal side and larger punctures of the striae. In these characters *D. latitarsus* coincides with the New Guinean species *D. semisulcatus,* which is distinguished by stronger dilated protarsi in males. All three species can be separated by the different shape of the apical piece of the aedeagus (compare Figs. 7–9).

Gonocephalum (Gonocephalum) tuberipenne **n. sp.** (Figs. 2, 12, 18)

Holotype ♂: Borneo, Malaysia, Sabah, Tambunan, 500 m, 28.–31.III.2007, R. Grimm leg. (CRG).

Paratypes: Same data as holotype, 9 ♀♀ (CRG), 1 ♀ (HNHM). – Same locality as holotype, 30.I.2010, R. Grimm leg., 1 ♀ (CRG). – Borneo, Sabah, Kampung Takala, Kinabatangan river, 5.VI.1998, Kodada & Ciampor leg., 3 ♀♀ (SMNS). – Borneo, Sabah, Tawau Hills Park, Tawau river, 8.VI.1998, Kodada & Ciampor leg., 1 ♂ (SMNS).

Etymology

Tuber (Lat.) = hump, bump, protuberance; penna (Lat.) = feather or wing (referring to elytron in this case).

Description

Elongate-oval, black, matt with shiny granules (especially on elytra). Body length 8.1–10.6 mm, body width 3.5–4.6 mm.

Head with clypeus deeply sinuate, clypeo-genal meeting deeply notched, lateral margins of clypeus straight, fronto-clypeal suture deeply and broadly impressed. Genae broader than eyes. Surface microreticulate with irregular ridges and setigerous tubercles, eye-ruga faintly marked, frons beside eye-ruga with shallow impression. Length ratios of antennomeres as 3.75:1.50:3.88:2.25:2.00:1.88:1.50: 1.50:1.50:1.50:2.25; last 4 antennomeres forming a club.

Pronotum subhexagonal, widest at base, about 1.5 times as wide as long, width/length ratio (both measured in the middle) 1.5–1.65; disc convex, with four shallow impressions, lateral parts broadly explanate; lateral margins weakly rounded in the middle and sinuate before base and apex; posterior margin bisinuate with middle part in front of scutellum straight, anterior margin broadly emarginate; anterior corners strongly protruding forward, anterior and posterior angles acute, posterior angles directed obliquely outwards. Surface strongly sculptured, covered by very fine irregular mesh forming small spaces with a granule in the centre bearing a short, broad, inclined yellowish seta as on head; surface around granules microreticulate.

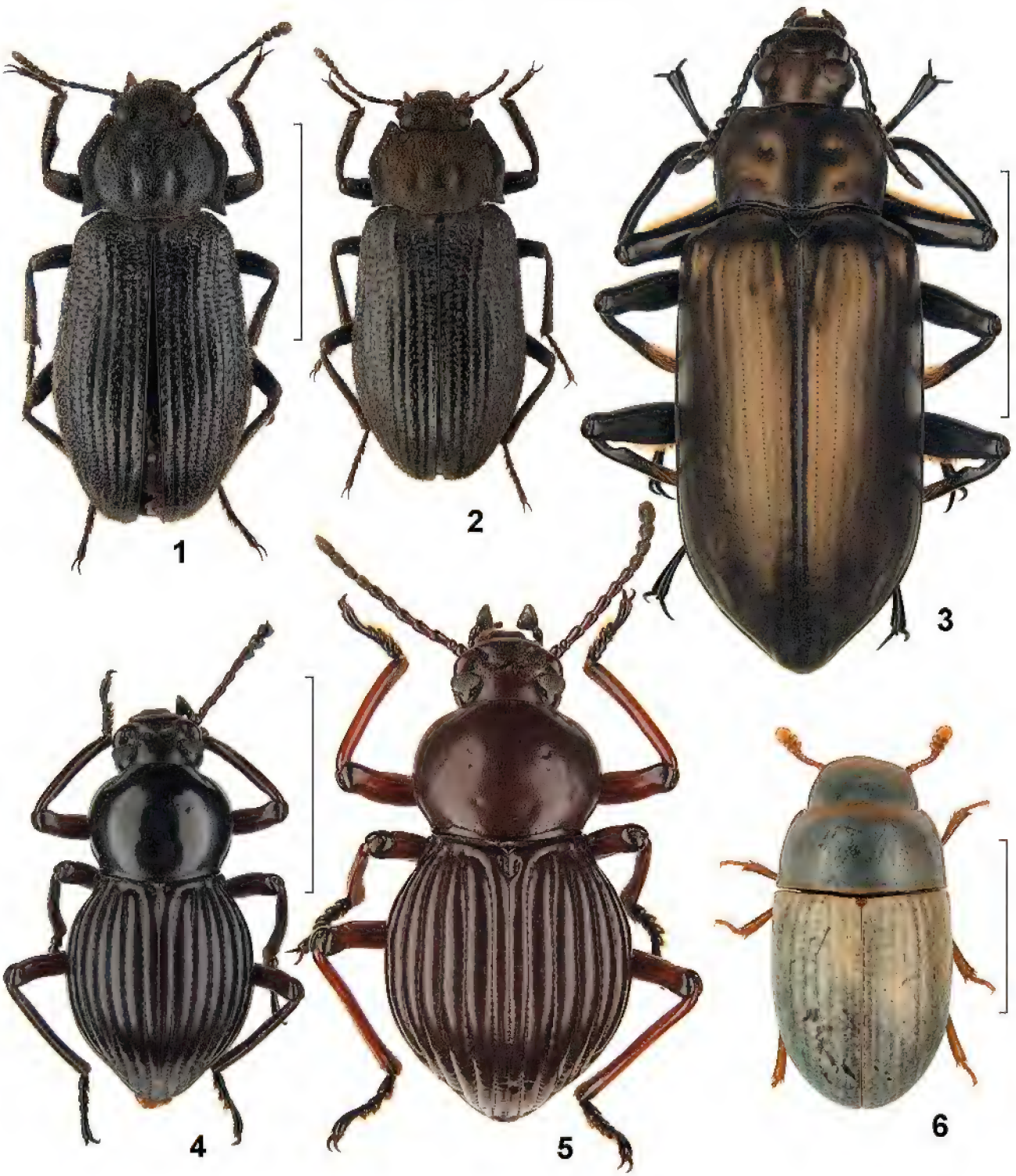
Elytra slightly dilated posteriorly, with maximum width before end of second third; humeral callus conspicuous, intervals 4 and 5 raised at base, forming a bump; posterior part of scutellum and base of elytra around scutellum raised; sutural interval somewhat raised posteriorly before and on elytral declivity. Striae with distinct punctures, connected toward apex by fine lines; intervals broader and flat or slightly convex on disc, narrower and strongly convex toward apex, with two irregular rows of granules on disc, merging into one row before apex. Lateral margin invisible in dorsal view. Base of epipleura on inner part with a protuberance, more pronounced in females than in males.

Legs. Male protibiae (Fig. 18) narrow with inner side weakly expanded in middle, underside grooved in basal two-thirds. Female protibiae without modification.

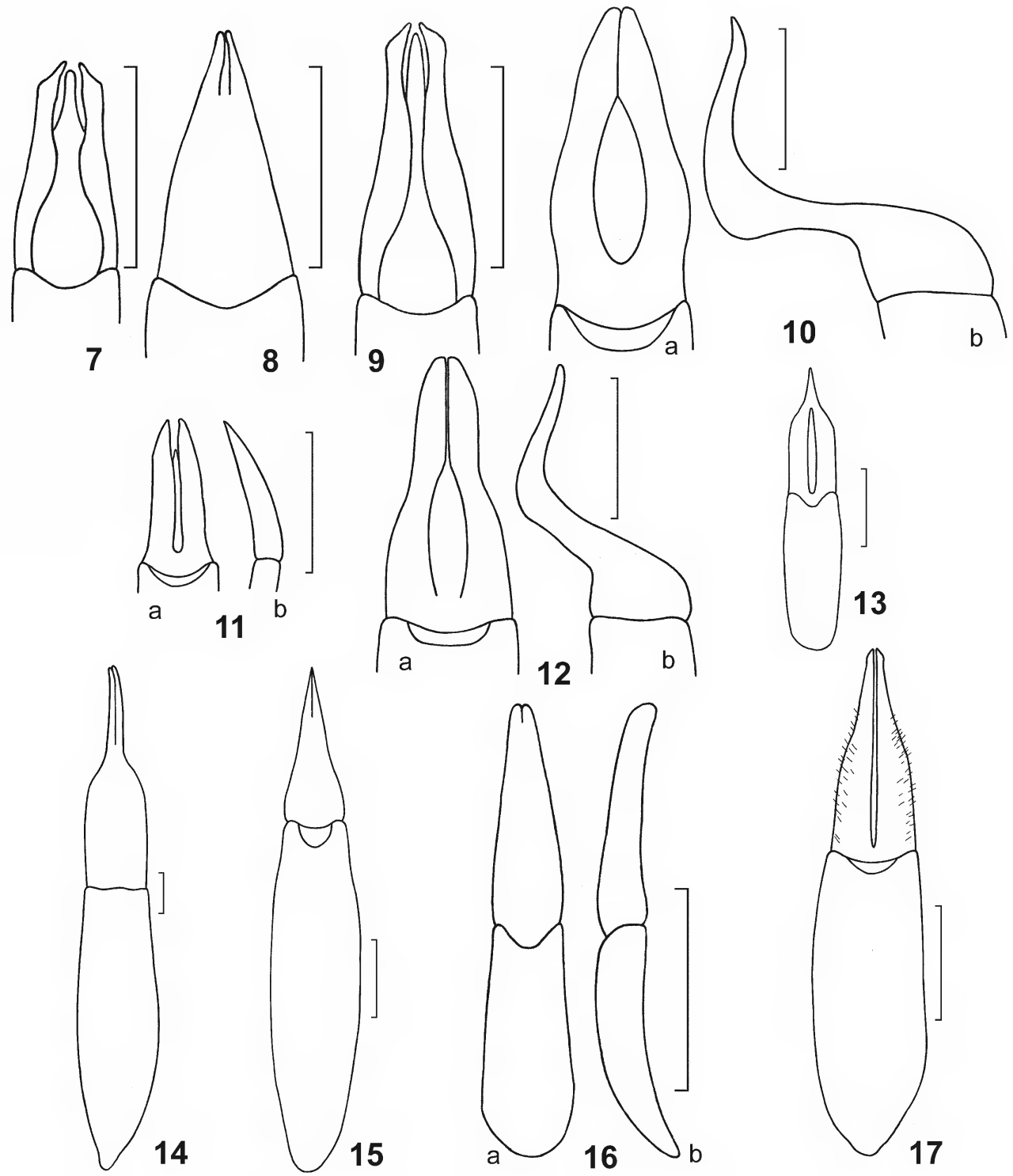
Apical piece of aedeagus see Fig. 12.

Differential diagnosis

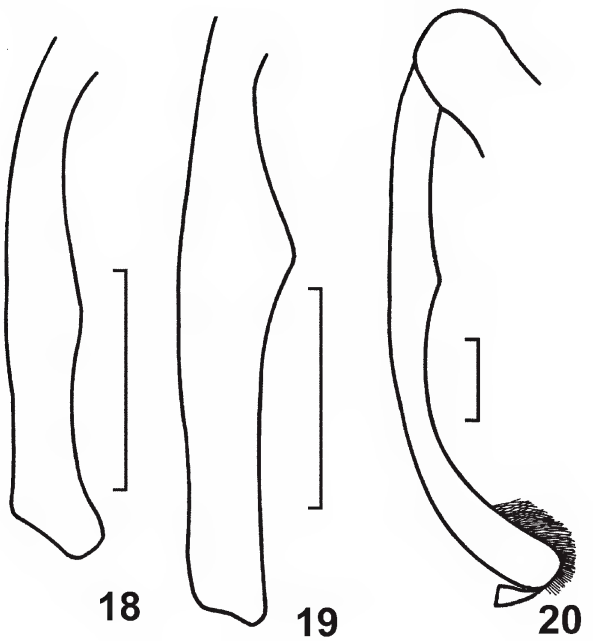
At fist glance, *Gonocephalum tuberipenne* n. sp. is very similar to *G. impressiusculum* Gebien, 1920. However, it can be separated from *G. impressiusculum* by larger body size (body length of *G. tuberipenne* n. sp. 8.1–10.6 mm, of *G. impressiusculum* 7.1–7.7 mm), bumped elevation on elytral base and scutellum, raised sutural interval, protuberance on base of epipleuron, apically broadened male protibiae with inner side slightly expanded in the middle (Fig. 18) and underside excavate in basal two-thirds (tibiae cylindrical with incurved apices in *G. impressiusculum* (cf. Gebien 1920, Kaszab 1952), and by entirely different apical piece of the aedeagus (compare Figs. 11, 12).



Figs. 1–6. Tenebrionidae spp., dorsal view. – **1**. *Gonocephalum tibiale* n. sp. ♂ holotype (SMNS). **2**. *G. tuberipenne* n. sp. ♂ holotype (CRG). **3**. *Promethis martinii* n. sp. ♂ holotype (CRG). **4**. *Camptobrachys sarawakensis* n. sp., ♂ holotype (CRG). **5**. *Camptobrachys sarawakensis* n. sp., ♀ paratype (CRG). **6**. *Zypoetes borneensis* n. sp., holotype (CRG). – Scales: 1 mm (6), 5 mm (1, 2, 4, 5), 10 mm (3).



Figs. 7–17. Aedeagi of Tenebrionidae spp. – **7–12**. *Diphyrrhynchus* and *Gonocephalum* ssp., apical piece of aedeagi. **7**. *Diphyrrhynchus latitarsus*, dorsal view. **8**. *D. caledonicus*, dorsal view. **9**. *D. semisulcatus*, dorsal view. **10**. *Gonocephalum tibiale* n. sp., dorsal (a) and lateral (b) view. **11**. *G. impressiusculum*, dorsal (a) and lateral (b) view. **12**. *G. tuberipenne* n. sp., dorsal (a) and lateral (b) view. – **13–17**. *Camptobrachys*, *Catapiestus* and *Promethis* spp., aedeagi. **13**. *Camptobrachys sarawakensis* n. sp., dorsal view. **14**. *C. pici*, dorsal view. **15**. *C. chujoi*, dorsal view. **16**. *Catapiestus mediocris*, dorsal (a) and lateral (b) view. **17**. *Promethis martinii* n. sp., dorsal view. – Scales: 0.5 mm (7–16), 1 mm (17).



Figs. 18–20. *Gonocephalum* and *Promethis* spp., male protibiae. – **18**. *Gonocephalum tuberipenne* n. sp. **19**. *G. tibiale* n. sp. **20**. *Promethis martinii* n. sp. – Scales: 1 mm (20), 3 mm (18, 19).

Gonocephalum (Gonocephalum) tibiale **n. sp.**
(Figs. 1, 10, 19)

Holotype ♂: [Borneo], Indonesia, Kalimantan-Timur, Apokayan, Long Ampung, 700 m, Sekundärwald [= secondary forest], 10.–25.II.1997, C. & P. Zorn leg. (SMNS).

Etymology

The species name refers to the specific form of the male protibiae.

Description

Elongate-oval, black, matt, with shiny granules (especially on elytra). Body length 9.8 mm, body width 4.1 mm.

Head with clypeus deeply sinuate, clypeo-genal meeting deeply notched, lateral margins of clypeus straight, fronto-clypeal suture deeply and broadly impressed. Genae broader than eyes. Surface microreticulate with irregular ridges in anterior part and setigerous tubercles becoming denser in posterior part, eye-ruga faintly marked, frons beside eye-ruga with shallow impression. Length ratios of antennomeres as 4.28:1.57:5.00:3.00:2.57:2.57:2.43: 2.41:1.86:2.43:3.28; last 4 antennomeres forming a club.

Pronotum subhexagonal, widest at base, about 1.5 times as wide as long, width/length ratio (both measured in the middle) 1.5; disc convex, with three shallow impressions, lateral parts broadly explanate; lateral margins weakly rounded in the middle and sinuate before base and apex; posterior margin bisinuate with middle part in front of scutellum straight, anterior margin broadly emarginate; anterior corners strongly protruding forward, anterior and posterior angles acute, posterior corners directed obliquely backwards. Surface strongly sculptured, covered by very fine irregular mesh forming small spaces, with a granule in the centre bearing a short, broad, inclined yellowish seta as on head; surface around granules microreticulate.

Elytra slightly dilated posteriorly, with maximum width in the middle, humeral callus conspicuous, intervals 3–6 raised at base, forming a bump; posterior part of scutellum and base of elytra around scutellum raised; sutural interval somewhat raised posteriorly before elytral declivity. Striae with distinct punctures, connected by fine lines; intervals broader and flat or slightly convex on disc, narrower and strongly convex toward apex, with two irregularly rows of setigerous granules. Lateral margin invisible in dorsal view.

Legs. Ventral side of profemora feebly excavate in distal part. Male protibiae broad, dorsal side flat with a distinct, broadly rounded expansion before middle, underside grooved in basal quarter. Mesotibiae straight, metatibiae slightly bent in lateral view.

Apical piece of aedeagus see Fig. 10.

Differential diagnosis

G. tibiale n. sp. is similar to *G. tuberipenne* n. sp. having the conspicuous humeral callus, same basal elytral intervals, the bumped posterior part of the scutellum and the elytral area around it, and the similarly angulate shape of the aedeagus in lateral view (compare Figs. 10b, 12b). The new species differs from *G. tuberipenne* n. sp. in the posterior pronotal corners which are directed obliquely backwards (directed outwards in *G. tuberipenne* n. sp.), the entirely different shape of the male protibiae (compare Figs. 18, 19), and the lack of protuberance on the base of the epipleura.

2.4 Stenochiinae Kirby, 1837

Cnodalonini Gistel, 1856

Camptobrachys sarawakensis **n. sp.**
(Figs. 4–5, 13)

Holotype ♂, Borneo, Malaysia, Sarawak, Santubong Peninsula, Permai Rainforest Resort, 20–200 m, 21.III.2008, R. Grimm leg. (CRG).

Paratypes: Same data as holotype, 1 ♀ (SMNS). – Same data as holotype, but 13.–15.III.2008, 1 ♀ (CRG). – Same data as holotype, but 23.–27.III.2009, 1 ♀ (CRG). – Same data as holotype, but 4.–8.IV.2009, 2 ♀♀ (CRG). – Borneo, Malaysia, Sarawak, Gunung Gading Nat. Park, 100–

300 m, 23.–29.IX.2008, R. GRIMM leg., 2 ♀♀ (CRG). – Borneo, Malaysia, Sarawak, Gunung Gading Nat. Park, 100–300 m, 31.III.–3.IV.2009, R. GRIMM leg., 1 ♀ (CRG).

Etymology

Named after Sarawak where the type series was collected.

Description

Strongly convex, castaneous, legs paler, reddish-brown, apex of femora, tarsi and mouthparts partly black. Body length 9.0–11.4 mm, body width 4.4–5.8 mm.

Head with deep and broad ocular sulcus, weakly notched between clypeus and genae, clypeus flat with anterior border straight, finely punctured, intermingled with larger punctures in basal half and especially near clypeal sulcus. Frons flat, smooth to minutely punctured on posterior part, very coarsely punctured near clypeal sulcus, punctation partly confluent and continuing beyond clypeal sulcus; vertex almost smooth, genae raised, punctured as clypeus. Length ratios of antennomeres 1–11 as 10.5:4:6.5:8.5:8.5:7.5:7.5:7:7:7.5:12.5.

Pronotum finely punctured, convex, cordate, widest before middle, width/length ratio (width measured at widest point, length along longitudinal midline) 1.14–1.26. Lateral borders arcuate anteriorly, nearly straight posteriorly; posterior border arcuate, anterior border nearly straight, lateral borders finely and sharply margined, lateral margins partially invisible in dorsal view; anterior margin interrupted in the middle, posterior border broadly margined, anterior and posterior angles obtuse, anterior angles rounded. Prosternal process bent down between coxae, extending toward rounded apex.

Elytra obovate, sometimes nearly rounded, strongly convex, with lateral intervals bent downwards; deeply striate, striae finely punctate on disc, punctures more distinct on lateral striae; intervals strongly convex, smooth. Length/width ratio 1.03–1.23. Combined base of elytra shallowly sinuate. Lateral margin in dorsal view only visible near base and apex.

Legs long, narrow, tibiae straight, subcylindrical.

Aedeagus see Fig. 13.

Differential diagnosis

Camptobrachys sarawakensis n. sp. is the third species of the genus known to occur in Borneo. According to KASZAB (1982) the black coloured *C. pici* Kaszab, 1941 from Brunei, with 16.0–16.6 mm body length, is the largest of all known congeners, and is moreover distinguished by oblong-oval elytra (length/width ratio 1.34). *C. sarawakensis* n. sp. is castaneous with paler reddish-brown legs and black apex of femora, it is smaller (body length 9.0–11.4 mm) and has short-oval elytra (length/width ratio 1.03–1.23). *C. chujoi* Kaszab, 1982 from Kalimantan is similar to *C. sarawakensis* n. sp. in the general colouration, but the apices of the femora are not black. The pronotum of *C. chujoi* is only very weakly cordate with lateral borders less arcuate, and the anterior angles are not rounded as in *C. sarawakensis* n. sp. All three species can easily be distinguished by the different shapes of the aedeagus (compare Figs. 13–15).

Catapiestus mediocris Guérin-Méneville, 1841
(Fig. 16)

Material studied

Borneo, Penrissan, V.[18]99, MOULTON, 2 "plesiotypes" (NHMB-F). – Borneo, F. RACZES, 1886, 1 specimen (NHMB-F). – Borneo, Malaysia, Sabah, Kudat, Pantai Bak Bak, 25.III.2007, R. GRIMM leg., 1 specimen (CRG). – Same locality, 20.–23.I.2010, R. GRIMM leg., 8 specimens (CRG), 1 specimen (SMNS). – Borneo, Malaysia, Sabah, Tambunan, 500 m, 14.–15.III.2007, R. GRIMM leg., 1 specimen (CRG). – Same locality, 16.–19.I.2010, R. GRIMM leg., 1 specimen (CRG). – Borneo, Malaysia, Sabah, Keningau, 300 m, 25.–26.I.2010, R. GRIMM leg., 1 specimen (CRG).

Distribution

Borneo: East Malaysia (Sarawak, Sabah).

Remarks

GUÉRIN MÉNEVILLE (1841) described *C. mediocris* from Borneo. GEBIEN (1913, 1914) expanded the distribution of this species to Borneo and the Philippines. LANG & REN (2009), in their review of the genus *Catapiestus* Perty, 1831, cite the distribution from GEBIEN (1913), but do not mention newly collected material. LANG & REN (2009) indicate only *C. mediocris* for Borneo, however, according to GEBIEN (1914) and corresponding specimens in NHMB-F, *C. simillimus* Fairmaire, 1893 also occurs in Borneo. This occurrence has to be confirmed.

The aedeagus of *C. mediocris* (Fig. 16) is figured in the present paper, in completion to LANG & REN (2009).

Promethis martinii **n. sp.**
(Figs. 3, 17, 20)

Holotype ♂: Borneo, Malaysia, Sabah, Mt. Trus Madi, 1100 m, 1.–15.IV.2005, K. MARTINI leg. (CRG).

Etymology

Named in honour of KARL MARTINI (Ingolstadt), collector of the holotype.

Description

Elongate-oval, dorsal side bronze-coloured, ventral side and appendages black. Body length 27 mm, body width 10 mm.

Head with clypeus very slightly emarginate, fronto-clypeal suture sulcate, fronto-genal suture distinct but

not sulcate; finely punctured, with punctural interspaces smooth on anterior part of clypeus and on genae, becoming more coriaceous toward posterior part of head. Mentum subhexagonal, slightly convex transversally, bicoloured, with a longer, cordate, piceous, evenly densely and coarsely punctured, pilose basal part and a shorter transversal, fulvous, smooth, laterally impressed apical part; anterior border slightly emarginate.

Pronotum transverse, widest in the middle, width/length ratio (measured along transversal and longitudinal midlines) 1.4; anterior border shallowly emarginate, lateral borders slightly rounded, posterior border slightly bisinuate, all borders distinctly margined, margin of anterior border interrupted in the middle; surface coriaceous, intermingled with fine scattered punctures; disc with distinct midlongitudinal sulcus and two weak rounded impressions with a central fovea just before middle, and two smaller oblique impressions in posterior third. Prosternum slightly arcuate to anterior and posterior border; prosternal process flat, broad and bisulcate.

Elytra finely coriaceous with fine punctural rows, intervals flat; ventricose in lateral aspect with arcuate contours discally; lateral margin in dorsal view visible almost over entire length, only basally concealed by humeral callosity. Posterior part of mesoventrite and medial part of metaventrite impressed and pilose, first abdominal ventrite pilose between hind coxae, last ventrite strongly margined.

Legs. Profemora densely pilose on ventral side; protibiae (Fig. 20) narrow, on inner side with tooth-like angulation near middle, strongly curved apically with yellow hair-brush on inner side. Mesotibiae in distal half on inner side pilose. Metafemora on ventral side not emarginate before apex; metatibiae basally emarginate, before emargination of inner border with a blunt tooth followed by a sharp edge running toward the middle, distal part between tooth and apex pilose.

Aedeagus see Fig. 17.

Differential diagnosis

In the key to the species of the genus *Promethis* Pascoe, 1869 of Kaszab (1988), the new species *Promethis martinii* n. sp. would run to *P. cupripennis* (Boheman, 1858). However, *P. martinii* n. sp. can be easily separated from *P. cupripennis* by the coriaceous, bronze-coloured elytra with flat intervals (darker metallic or blackish with intervals convex in *P. cupripennis*), the elytra which are in lateral aspect ventricose with arcuate contours discally (simple with flattened disc and straight contours discally in *P. cupripennis*), the impressed mesoventrite (not impressed in *P. cupripennis*), the narrow protibiae with a single blunt tooth in the middle of the inner side (Fig. 20) (broad with a tooth in the middle and a second one between this tooth and the base of the protibiae in *P. cupripennis*, cf. Kaszab 1988: fig. 517), and the apical piece of the aedeagus more strongly narrowed distally (compare Fig. 17, Kaszab 1988: fig. 514).

Stenochiini Kirby, 1837

Bremerianus baehri Masumoto & Bečvář, 2005

Material studied

Borneo, Malaysia, Sarawak, NW Kuching, Matang Wildlife Centre, 50–100 m, 16.–17.III.2008, R. Grimm leg., 1 specimen (CRG).

Remarks

B. baehri Masumoto & Bečvář, 2005 was described on the basis of specimens from W Malaysia and Sumatra. According to Masumoto & Bečvář (2005) the body length of *B. baehri* is 5.6 mm. The specimen from Matang Wildlife Centre is much smaller, with a body length of 4.0 mm.

Distribution

W Malaysia, Sumatra (Masumoto & Bečvář 2005), Borneo (new record).

3 References

Chûjô, M. (1973): Two new tenebrionid species from Borneo and Thailand (Col.: Tenebrionidae & Lagriidae). – Esakia **8**: 25–29.

Gebien, H. (1913): Die Tenebrioniden der Philippinen. – The Philippine Journal of Sciences, Section D, **8**: 401–433.

Gebien, H. (1914): Die Tenebrionidenfauna Borneos – Erster Teil. – Sarawak Museum Journal **2 (5)**: 1–14, pl. 1.

Gebien, H. (1920): Uitkomsten der Nederlandsche Nieuw-Guinea-Expedition in 1912 en 1913 onder leiding van A. Franssen Hederschee. – Tenebrionidae. – Nova Guinea, Zoologie **13**: 213–500, pls. IX–XI.

Grimm, R. (2010): New and little known species of Tenebrionidae (Coleoptera) from Borneo. – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **3**: 257–267.

Guérin Méneville, F. E. (1841): Description de quelques coléoptères nouveaux provenant de la Tasmanie, du port du Otago (Nouvelle Zélande), d'Esington-Bay (Australie septentrionale), de Triton-Bay (Nouvelle-Guinée), et des îles Vavao, Salomon, Ternate, Borneo, Aukland, etc. – Revue zoologique par la Société Cuvierienne **4**: 120–128.

Kaszab, Z. (1952): Die indomalayischen und ostasiatischen Arten der Gattung *Gonocephalum* Solier (Coleoptera, Tenebrionidae). – Entomologische Arbeiten aus dem Museum G. Frey **3**: 416–688.

Kaszab, Z. (1982): Die Gattung *Camptobrachys* Kaszab, 1941 (Coleoptera, Tenebrionidae). – Special issue in memory of retirement of emeritus Professor Michio Chûjô: 81–85; Nagoya (Nagoya Women's University).

Kaszab, Z. (1988): Katalog und Bestimmungstabelle der Gattung *Promethis* Pascoe, 1869 (Coleoptera, Tenebrionidae). – Acta Zoologica Academiae Scientiarum Hungaricae **34**: 67–170.

LANG, J.-T. & REN, G. D. (2009): A review of the genus *Catapiestus* Perty, 1831 (Coleoptera: Tenebrionidae: Cnodalonini) with descriptions of two new species from China. – Caucasian entomological Bulletin **5**: 195–423.

MASUMOTO, K. & BEČVÁŘ, S. (2005): Two new tenebrionid species of a new genus (Coleoptera, Tenebrionidae, Strongyliini) from Oriental Region. – Elytra, Tokyo **33**: 417–423.

MATTHEWS, E. G. & BOUCHARD, P. (2008): Tenebrionid beetles of Australia – descriptions of tribes, keys to genera, catalogue of species. – Australian biological Resources Study, 398 pp.; Canberra

SCHAWALLER, W. (2005): Three new tenebrionids (Coleoptera: Tenebrionidae) from Sumatra – new species or new genera? – Annales zoologici **55**: 565–569.

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Two new species of the genus *Triplehornia* Matthews & Lawrence from Borneo and the Philippines (Coleoptera: Tenebrionidae)

Roland Grimm

Abstract

Triplehornia floreni **n. sp.** (East Malaysia/Sabah) and *T. philippinensis* **n. sp.** (Philippines/Leyte) are described and compared with *T. metallica* Matthews & Lawrence, 2005 (Australia/Queensland).

Keywords: Tenebrionidae, *Triplehornia*, Borneo, Philippines, new species.

Zusammenfassung

Triplehornia floreni **n. sp.** (Ost-Malaysia/Sabah) und *T. philippinensis* **n. sp.** (Philippinen/Leyte) werden beschrieben und mit *Triplehornia metallica* Matthews & Lawrence, 2005 (Australien/Queensland) verglichen.

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1 Introduction

The genus *Triplehornia* was described by Matthews & Lawrence (2005), based on the single (type) species *T. metallica* Matthews & Lawrence, 2005 from Australia. According to the authors the genus is probably a member of the subfamily Diaperinae, but its tribal position is still unknown. Matthews & Bouchard (2008) noted that a similar species (or even the same one) has been collected in the Philippines. The study of the material revealed that the species from the Philippines is new to science. An additional species was collected by tree fogging in East Malaysia by Dr. Andreas Floren (Würzburg).

Acknowledgements

Cordial thanks are due to Drs. Andreas Floren (Würzburg), Eric G. Matthews (Adelaide), and Wolfgang Schawaller (Stuttgart) for gift and/or loan of material. Dr. Wolfgang Schawaller (Stuttgart) gave the hint to *Triplehornia* with respect to the Bornean specimens. Johannes Reibnitz (Stuttgart) prepared the photographs and arranged the figures on plates. Furthermore, I am grateful to Dr. Ottó Merkl (Budapest) and Dr. Wolfgang Schawaller for reviewing the manuscript.

Acronyms of depositories

CAF	Collection Dr. Andreas Floren, University of Würzburg, Germany
CRG	Collection Dr. Roland Grimm, Tübingen, Germany
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany

2 Descriptions of new species

Triplehornia floreni **n. sp.**
(Figs. 1, 3)

Holotype (sex not examined): [Borneo, Malaysia, Sabah], Pulau Gaya, *Elaeocarpus pedunculatus* 27, 22.VIII.2009, A. Floren leg. (CRG).

Paratypes: Same data, 1 ♂ and 1 unsexed specimen (CRG), 1 ♂ (without head) and 1 unsexed specimen (CAF).

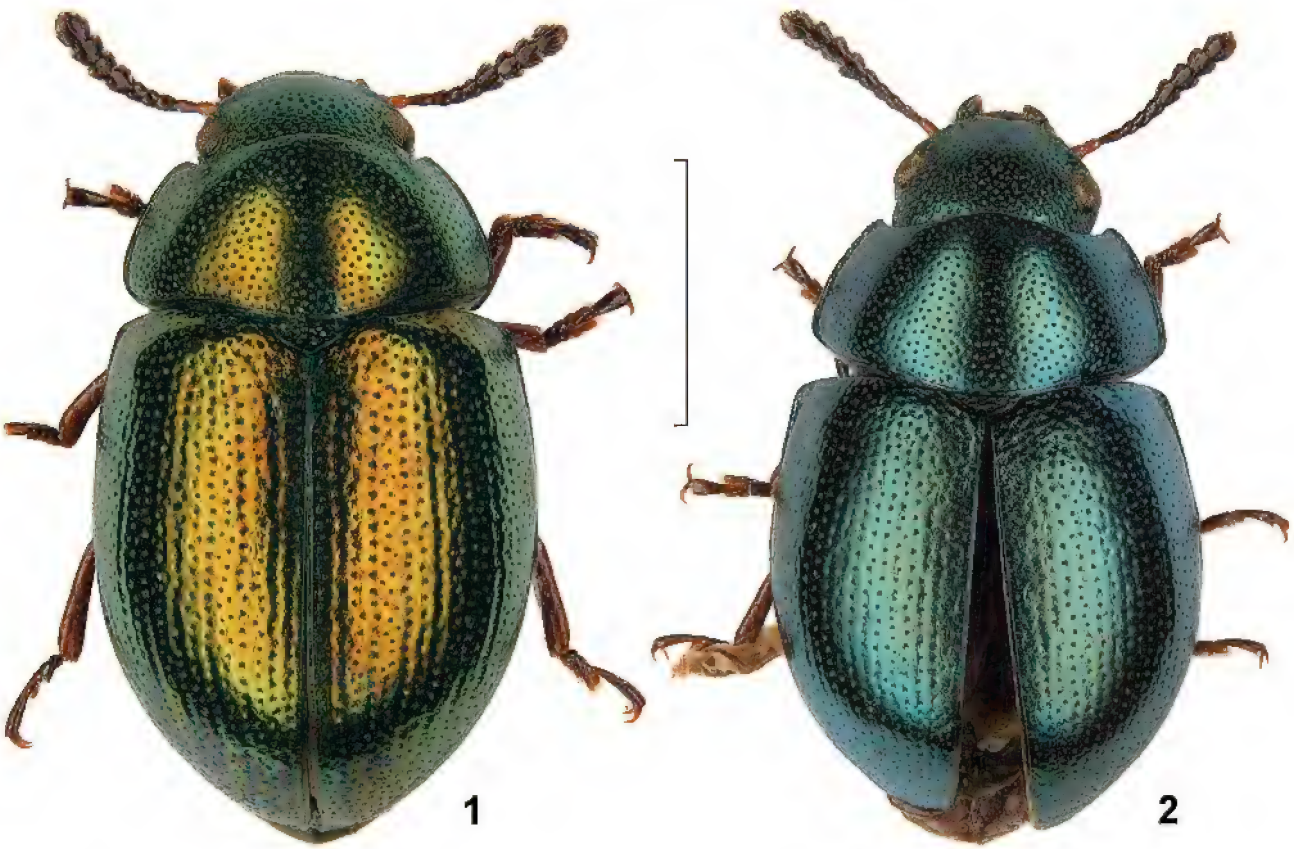
Etymology

Named in honour of Dr. Andreas Floren (Würzburg) the collector of the type series.

Description

Broadly oval, convex, glabrous, dorsal side metallic green, sometimes with coppery reflections; surface between punctures with variable, mainly indistinct microreticulation. Body length 2.9–3.0 mm, body width 1.7–1.8 mm.

Head subtrapezoidal, anterior border of clypeus nearly straight, forming obtuse, slightly rounded angles with lateral edges of head running straight to ends of eye canthi. Frontoclypeal suture complete, but indistinct. Surface evenly and coarsely punctured. Eyes reniform, dorsal part larger than ventral part. Antennae 10-segmented, short, not reaching base of pronotum; black with scape and pedicel fulvous, distal four antennomeres enlarged into a club.



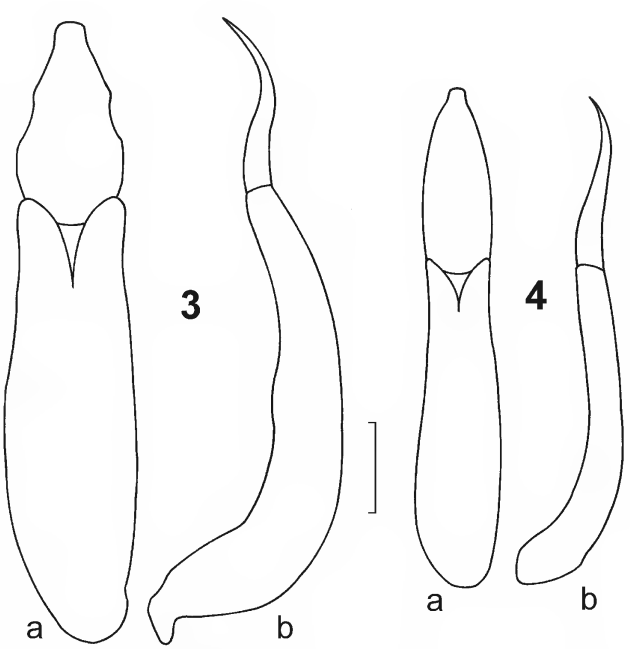
Figs. 1–2. *Triplehornia* spp., dorsal view. – **1**. *Triplehornia floreni* n. sp., holotype (CRG). **2**. *T. philippinensis* n. sp., paratype (SMNS). – Scale: 1 mm.

Pronotum transverse, convex, widest just before base, evenly and coarsely punctured, punctures somewhat finer as on head; anterior border slightly and broadly arcuate in the middle, emarginate beside anterior angles, anterior angles not protruding beyond middle of anterior border; lateral borders shallowly arcuate, converging toward anterior angles; basal border broadly arcuate in about middle third, both anterior and posterior angles broadly rounded; anterior pronotal margin only present laterally around anterior angles, widely absent in the middle; lateral margins strong, basal margin finer but distinct. Scutellum strongly transverse, triangular.

Elytra evenly convex; surface with numerous punctures arranged in about 18 rows, three lateral rows distinctly finer than remaining ones; intervals on disc narrower than punctural rows. Lateral margin in dorsal view only visible in about basal half.

Legs short. Basal tarsomeres short, ventrally lobed, their plantar surfaces bearing long, dense fine setae; last tarsomere elongate, in meso- and metatarsi longer than remaining segments combined.

Aedeagus see Fig. 3.



Figs. 3–4. *Triplehornia* spp., aedeagi in dorsal (a) and lateral (b) view. – **3**. *Triplehornia floreni* n. sp. **4**. *T. philippinensis* n. sp. – Scale: 0.1 mm.

Differential diagnosis

See under *Triplehornia philippinensis* n. sp.

Triplehornia philippinensis **n. sp.**
(Figs. 2, 4)

Holotype (♂): Philippines, Leyte, SW Abuyog, 28.II.1991, river bank, W. SCHAWALLER leg. (SMNS).

Paratypes: Same data as holotype, 3 specimens (SMNS).

Etymology

Named after the Philippines, where the type-series was collected.

Description

Broadly oval, convex, glabrous, dorsal side metallic dark blue, surface between punctures distinctly microreticulate. Body length 2.8–2.9 mm, body width 1.5–1.7 mm.

Head subtrapezoidal, anterior border of clypeus nearly straight, forming obtuse angles with lateral edges of head running straight to ends of eye canthi. Frontoclypeal suture complete, but indistinct. Surface evenly and coarsely punctured. Eyes reniform, dorsal part larger than ventral part. Antennae 10-segmented, short, not reaching base of pronotum; black with scape and pedicel fulvous, distal four antennomeres enlarged into a club.

Pronotum transverse, convex, widest just before base, evenly and coarsely punctured, punctures somewhat finer as on head; anterior border slightly and broadly arcuate in the middle, emarginate beside anterior angles, anterior angles not protruding beyond middle of anterior border; lateral borders nearly straight, converging toward anterior angles; basal border broadly arcuate, anterior angles broadly rounded, posterior angles obtusely rounded; anterior pronotal margin only present laterally around anterior angles, widely absent in the middle; lateral margin strong, basal margin finer but distinct. Scutellum strongly transverse, triangular.

Elytra evenly convex; surface with numerous punctures arranged in about 18 rows, lateral rows indistinct and finer than remaining ones; intervals on disc as wide as punctural rows. Lateral margin in dorsal view only visible in about basal half.

Legs short. Basal tarsomeres short, ventrally lobed, their plantar surfaces bearing long, dense fine setae; last tarsomere elongated, in meso- and metatarsi longer than remaining segments combined.

Aedeagus see Fig. 4.

Differential diagnosis

The species of *Triplehornia* are characterized by the different shapes of their aedeagi (compare Figs. 3, 4 and MATTHEWS & LAWRENCE 2005: fig. 23). They are also easily recognized by the colouration of the dorsal side: blackish with metallic bronze, blue or green reflections in *T. metallica* Matthews & Lawrence, 2005; metallic green in *T. floreni* n. sp.; metallic dark blue in *T. philippinensis* n. sp. Furthermore, *T. floreni* n. sp. is distinguished by broadly rounded posterior angles of the pronotum, *T. philippinensis* n. sp. by distinct microreticulation of the dorsal side, and *T. metallica* by wider lateral margins of the pronotum.

3 References

MATTHEWS, E. G. & LAWRENCE, J. F. (2005): New taxa, new synonymy and new generic records for Australian Tenebrionidae (Coleoptera). – Annales zoologici **55**: 531–547.

MATTHEWS, E. G. & BOUCHARD, P. (2008): Tenebrionid beetles of Australia – descriptions of tribes, keys to genera, catalogue of species. – Australian biological Resources Study, 398 pp.; Canberra.

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Two new species of the genus *Nalassus* Mulsant, subgenus *Helopondrus* Reitter (Coleoptera: Tenebrionidae) from Turkey

Maxim V. Nabozhenko

Abstract

Two new tenebrionid species, *Nalassus (Helopondrus) szalokii* **n. sp.** and *N. (H.) schmalfussi* **n. sp.** are described from eastern Turkey. Within the subgenus *Helopondrus*, the new species form a separate species-group which can be distinguished by the different structure of the elytral intervals: the 8th elytral interval is apically as convex as the other intervals and not keel-shaped; it is apically connected with the elytral margin and the 2nd interval.

K e y w o r d s : Tenebrionidae, *Nalassus*, *Helopondrus*, Turkey, new species.

Zusammenfassung

Zwei neue Tenebrioniden-Arten, *Nalassus (Helopondrus) szalokii* **n. sp.** and *N. (H.) schmalfussi* **n. sp.** aus der Osttürkei werden beschrieben. Die neuen Arten bilden innerhalb der Untergattung *Helopondrus* eine Arten-Gruppe, die sich durch die unterschiedliche Struktur der Elytren-Zwischenräume auszeichnet: der achte Zwischenraum ist apikal ebenso konvex wie die anderen Zwischenräume und nicht kielförmig; er ist außer mit dem Elytrenrand auch mit dem zweiten Zwischenraum verbunden.

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3 Taxonomy 264
3.1 *Nalassus (Helopondrus) szalokii* **n. sp.** 264
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4 Key to the Turkish species of *Nalassus* subgenus *Helopondrus* 267
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1 Introduction

The subgenus *Helopondrus* Reitter, 1922 of the genus *Nalassus* Mulsant, 1854 is widespread in the Caucasus, in Iran, eastern Turkey, and southern Turkmenistan. One species, *N. assimilis* (Mulsant, 1854), has a disjunct distribution area in the Tyrrhenian region in France and Italy. *Nalassus sareptanus* (Allard, 1876) populates the steppe zone from Moldavia to northwestern Kazakhstan (Nabozhenko 2001, 2004). Recently a review of Anatolian *Helopondrus* was published (Nabozhenko 2008), which added one species to this subgenus (Keskin & Nabozhenko 2010). Two new species of *Helopondrus* are described in this paper. Thus, the fauna of Turkey includes six species of the subgenus (see key chapter 4).

Nalassus szalokii n. sp. and *N. schmalfussi* n. sp., both from Southeast Turkey, form a separate group within the subgenus. These two species differ by absence of hair maculae on the 1st abdominal sternite of the males, and also by the structure of the 8th elytral interval which is as convex apically as the other intervals and connected not only with the edge of the elytra, but also with the 2nd interval. Genitalia and gastral spicula are typical for the subgenus *Helopondrus*. Other species of *Helopondrus* are known from Northeast Turkey.

Acknowledgements

The author is much obliged to Ottó Merkl (HNHM) and Wolfgang Schawaller (SMNS) for providing material, to Dezlo Szalóki (Eötvös Lorant University, Budapest) and Igor Shokhin (Institute of arid zones, Russian Academy of Sciences, Rostov-on-Don) for collecting some of the specimens, to Alexander Konstantinov (Smithsonian Institute, National Museum of Natural History, Washington) for linguistic review, to Konstantin Dvadnenko (Southern Scientific Centre, Russian Academy of Sciences, Rostov-on-Don) for scanning electron microscopy, and to Wolfgang Schawaller and Roland Grimm (Tübingen) for the review of the manuscript.

2 Material and methods

The study is based on the examination of material from the following institutes and museums: Collection of Dezlo Szalóki, Eötvös Lorant University, Budapest; Staatliches Museum für Naturkunde, Stuttgart (SMNS), Hungarian Natural History

Museum, Budapest (HNHM), Zoological Institute, Russian Academy of Sciences, St.-Petersburg (ZIN), Zoological Museum of Ege University, Bornova-Izmir (ZDEU).

Scanning electron microscopy was made in the analytic laboratory of Southern Scientific Centre RAS with the SEM EVO-40 XVP (LEO 143OVP).

3 Taxonomy

3.1 *Nalassus (Helopondrus) szalokii* **n. sp.**
(Figs. 1, 2, 6–10)

Holotype, ♂: "Turkey, road Van–Bitlis, near pass Kuskunkıran (h = 2240 m) between Van and Bitlis provinces, N 38°23' E 42°46', under stones with lichens, 25.05.2010, leg. M. V. & S. V. Nabozhenko, B. Keskin" (ZIN).

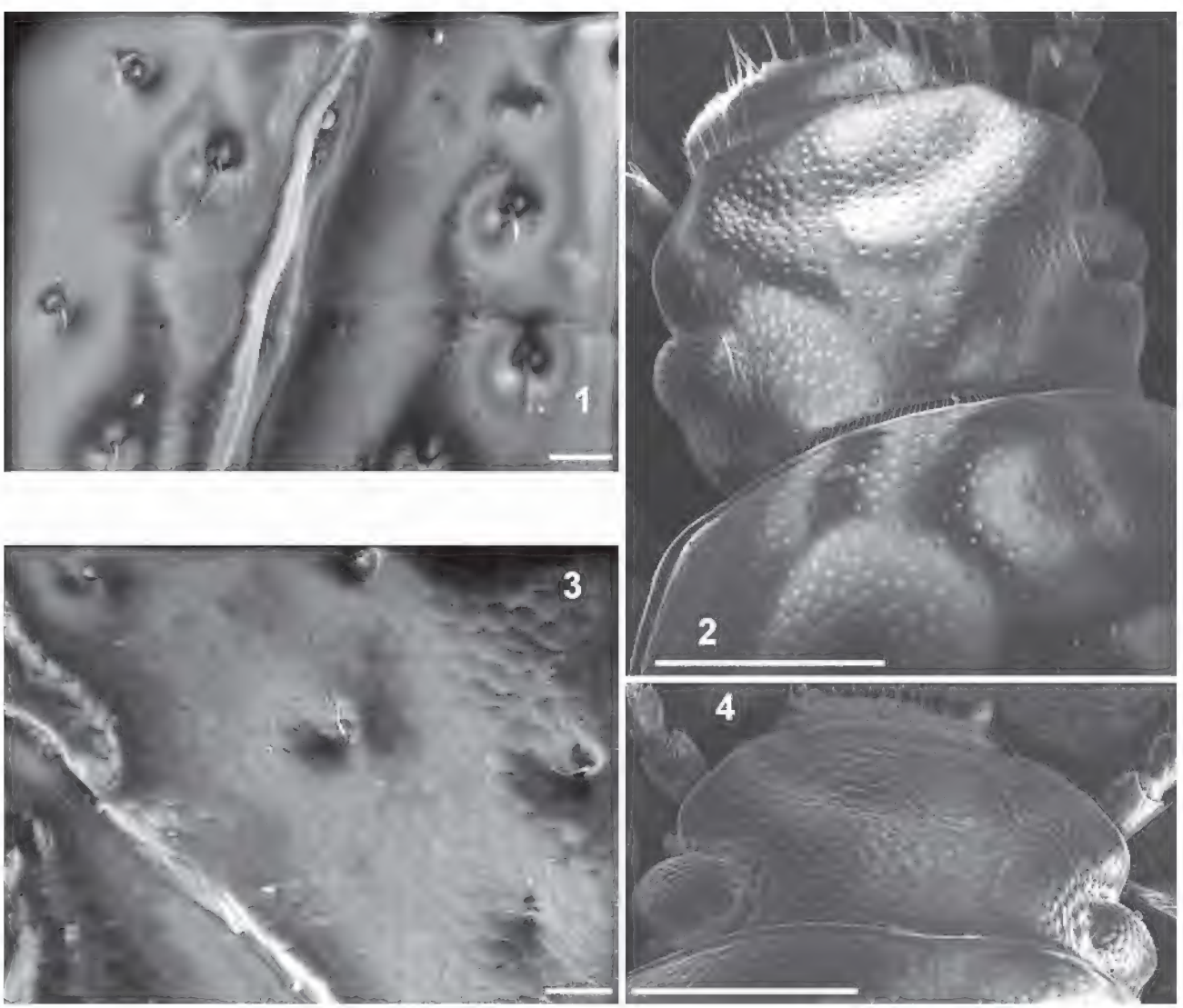
Paratypes: 1 ♂, 1 ♀, same data as holotype (ZDEU). – 1 ♂: "Turkey, Bitlis vil., Küçüksu, 1990.04.10, under stones, leg. Szalóki D." (HNHM). – 1 ♀: "Turkey, vil. Muş, Buglan gec., 7 km E Solhan, N 38°56' E 41°07' h = 1725–1930 m, 19.–22.05.2009, leg. I. V. Shokhin, D. G. Kasatkin" (ZIN).

Etymology

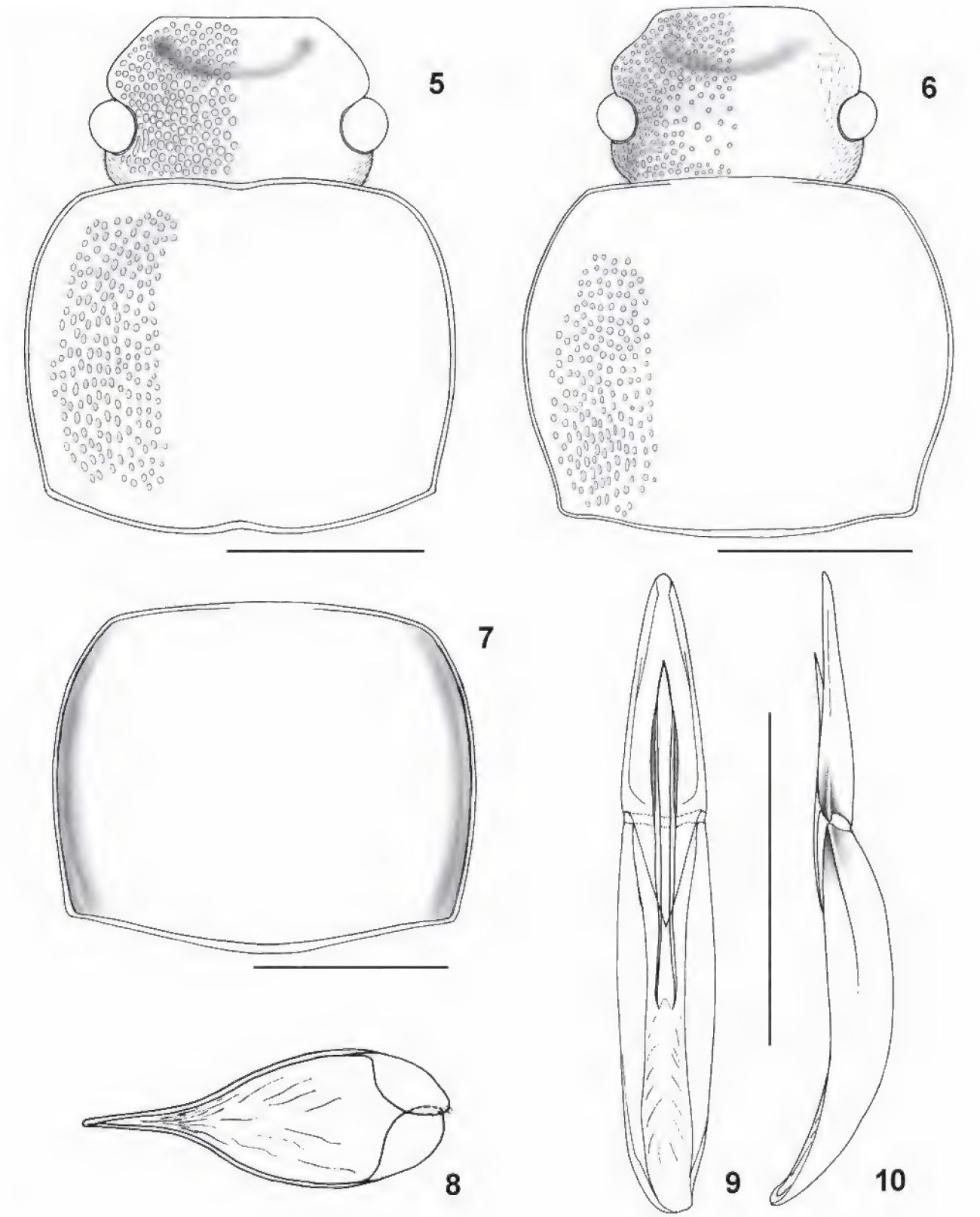
The new species is named in honour of the Hungarian entomologist and first collector of the species, Dezlo Szalóki (Budapest).

Description

Body brown, shining, convex. Head widest at level of eyes. Eyes small, convex. Ratio of head width at eyes to distance between eyes 1.4. Genae angle-shaped, rounded, straight at base. Outer margin of head between gena



Figs. 1–4. *Nalassus szalokii* n. sp. (1, 2) and *N. schmalfussi* n. sp. (3, 4). – **1**, **3**. Microsculpture of elytra. **2**, **4**. Head and anterior part of pronotum. – Scales: 20 µm (1, 3), 0.5 mm (2, 4).



Figs. 5–10. *Nalassus schmalfussi* n. sp., ♀ (5) and *N. szalokii* n. sp., ♂ (6–10). –**5**, **6**. Head and pronotum. **7**. Pronotum. **8**. Gastral spicula. **9**. Aedeagus, ventral view. **10**. Aedeagus, lateral view. – Scales: 1 mm.

and clypeus slightly and broadly emarginated. Transverse depression of head between frons and clypeus not deep. Base of frons and head surface near eyes (including temples) covered with short recumbent hairs. Punctation of head moderately dense and coarse: distance between punctures 1.5–2 times as wide as puncture diameter in middle of frons; diameter of punctures 1.5 times as wide as distance between punctures on clypeus. Temple grooves below eyes well developed. Antennae moderately long, three apical antennomeres extending beyond base of pronotum; four apical antennomeres flattened and weakly widened. Length/width ratio of 2nd–11th antennomeres: 0.6/0.5; 1.6/0.6; 1.1/0.5; 1.0/0.5; 1.1/0.5; 1.2/0.6; 1.4/0.8; 1.4/0.9; 1.3/0.9; 1.5/1.3. 3rd antennomere 2.6 times as long as 2nd and 1.45 times as long as 4th antennomere.

Pronotum weakly transverse (1.17 times as wide as long), widest at middle, 1.5 times as wide as head. Outer sides of pronotum moderately rounded, weakly emarginated near base. Anterior and posterior angles weakly obtuse, well visible on apex. Anterior margin of pronotum straight, base weakly rounded. Base and outer margins with deep border, anterior margin not edged in the middle. Disc of pronotum evenly strongly convex. Punctation of pronotum same as of head, but punctures longitudinally elongate on each side from middle near base. Propleura with longitudinal smoothed, fine rugae and very short and sparse recumbent setae. Prosternal process pubescent on base, weakly extending at apex (in lateral view).

Elytra convex, elongate, 2.25 times as long and 1.2 times as wide as pronotum. Intervals of elytra convex, the 8th interval apically as convex as the other intervals and not only connected with the edge of elytra, but also with the 2nd interval. Punctures arranged in striae connected in narrow and deep grooves. Punctation of intervals fine and sparse. Epipleura smooth, not depressed.

Abdominal sternites glabrous, with fine and sparse punctation and longitudinal wrinkles on sides. Anal sternite without border on apex.

Tibiae straight, fore tarsi very weakly widened. Tibiae and tarsi covered with dense goldish hairs. Sole of tarsi with dense hair brushes.

Aedeagus typical for the subgenus *Helopondrus*. Parameres flattened dorso-ventrally, elongate (length of phallobase from anterior part to base 1.5 times as long as parameres). Sclerites of penis short and narrow, not merged.

Gastral spicula typical for the genus *Nalassus*: branches narrow, widely placed, becoming closer towards apex, but remaining separate. Blades of spicula moderately elongate, weakly sclerotized.

♀: Lateral sides of pronotum weakly and narrowly flattened; outer margins of propleura narrowly flattened. Elytra slightly wider than at male, 1.3 times as wide as pronotum.

Body length 7 mm, width 2.5–2.7 mm.

Differential diagnosis

The new species is close to *Nalassus schmalfussi* n. sp. For differences to *N. schmalfussi* and to other species of the subgenus *Helopondrus* see the key below (chapter 4).

3.2 *Nalassus (Helopondrus) schmalfussi* **n. sp.** (Figs. 3–5)

Holotype, ♀: "Ost-Türkei, Umgeb. Van-See, 1800–2000 m, 1.–8.6.1986, leg. H. SCHMALFUSS" (SNMS).

Etymology

The species is named in honour of the known specialist on Isopoda HELMUT SCHMALFUSS (Stuttgart), collector of the holotype.

Description

Body black, matt, covered with fine reticular microsculpture, antennae and legs dark brown. Head widest at level of eyes. Eyes small, convex. Ratio of head width at eyes to distance between eyes 1.4. Genae rounded only at base, remaining margin straight. Outer margin of head between gena and clypeus straight, without emargination. Head dorsally covered with short recumbent setae near eyes, with transverse depression between frons and clypeus. Punctation of head coarse and dense, diameter of punctures 2–3 times as wide as distance between punctures. Temple grooves below eyes well developed. Antennae short, only the apical antennomere extending beyond base of pronotum; four apical antennomeres flattened, wider and longer than the other ones.

Pronotum transverse (1.24 times as wide as long), widest little before middle, 1.4 times as wide as head. Outer sides of pronotum weakly and regularly rounded, with small emargination in middle. Anterior angles obtuse, weakly rounded on apex, posterior angles weakly obtusangular, narrowly rounded on apex. All margins with narrow border. Disc of pronotum evenly convex. Punctation of pronotum moderately coarse, not dense, finer and sparser than on head, diameter of punctures subequal to distance between punctures; punctures longitudinally elongated on sides of disc. Propleura with fine longitudinal rugae and very short, sparse setae. Prosternum pubescent, prosternal process weakly convex.

Elytra moderately convex, elongated (1.5 times as long as wide), 1.3 times as wide and 2.5 times as long as pronotum, 1.85 times as wide as head. Intervals of elytra flat, the 8th elytral interval apically as convex as the other intervals and not only connected with the edge of elytra, but also with the 2nd interval. Punctures arranged in striae connected in grooves which are sometimes interrupted at base. 4th and 6th intervals connected on apex, forming hillock. Epipleura smooth, not depressed.

Abdominal sternites with fine and sparse punctation, not pubescent. Abdominal sternite without border on apex.

Tibiae straight, sole of tarsomeres with dense hair brush.

Body length 7 mm, width 2.5 mm.

Differential diagnosis

The new species is close to *Nalassus szalokii* n. sp. For differences to *N. szalokii* and to other species of the subgenus *Helopondrus* see the key below (chapter 4).

4 Key to the Turkish species of *Nalassus* subgenus *Helopondrus*

1 8th elytral interval apically as convex as the other intervals, not keel-shaped, connected with the elytral margin and the 2nd interval. **2**

– 8th elytral interval more convex than the other intervals, sometimes keel-shaped, connected only with the elytral margin, not with the 2nd interval. **3**

2 Body shining, brown. Outer margins of pronotum not emarginated at base, anterior margin and base not emarginated in the middle (Figs. 2, 6, 7). Anterior margin of pronotum without border in the middle. Longitudinal punctation expressed only at base of disc lateral to the middle. Elytral intervals convex. ..... ***N. szalokii* n. sp.**

– Body dull, black. Outer margins of pronotum emarginated at base, anterior margin and base with well visible emargination in the middle (Figs. 4, 5). Anterior margin of pronotum with border in the middle. Punctation of pronotum on sides longitudinal. Elytral intervals flattened. ..... ***N. schmalfussi* n. sp.**

3 Body large, often more than 10 mm long, strongly shining, with bronze-green metallic luster. Punctation of pronotum without longitudinally elongated punctures. 8th elytral interval keel-shaped on apex. Parameres of males elongated and sclerotized. ..... ***N. gloriosus*** (Faldermann, 1837)

– Body small, at most 10 mm long, moderately shining, without metallic luster. Punctation of pronotum on sides longitudinally elongated. 8th elytral interval more convex than the other intervals, but not keel-shaped. Parameres of males short, weakly sclerotized. **4**

4 Anterior angles of pronotum strongly projecting, acute, pointed at the apex. ..... ***N. adzharicus*** Nabozhenko & Dzhambazishvili, 2001

– Anterior angles of pronotum not projecting or moderately projecting, straight or obtuse, rounded at the apex. **5**

5 Anterior angles of pronotum moderately projecting, straight, narrowly rounded. Head at frons with longitudinally elongated punctation. Genae smoothly rounded, not parallel. ..... ***N. planivittis*** (Allard, 1876)

– Anterior angles of pronotum not projecting, obtuse, broadly rounded on apex. Head at frons with usual punctation of round punctures. Genae angled, parallel basally. ..... ***N. clavicornis*** Allard, 1876

5 References

Keskin, B. & Nabozhenko, M. V. (2010): A new species and new records of the genus *Nalassus* Mulsant, 1854 (Coleoptera: Tenebrionidae: Helopini) from Turkey. – Annales Zoologici **60**: 23–28.

Nabozhenko, M. V. (2001): On the classification of the tenebrionid tribe Helopini, with a review of the genera *Nalassus* Mulsant and *Odocnemis* Allard (Coleoptera, Tenebrionidae) of the European Part of CIS and the Caucasus. – Entomologicheskoe Obozrenie **80**: 627–668 [in Russian; English translation in Entomological Review 81 (8): 909–942].

Nabozhenko, M. V. (2004): New synonyms in the tribe Helopini. – Eurasian entomological Journal **3**: 185–186.

Nabozhenko, M. V. (2008): Review of the subgenus *Helopondrus* Reitter, 1922 of the genus *Nalassus* Mulsant, 1854 (Coleoptera: Tenebrionidae) of Turkey. – Russian entomological Journal **16** (2007): 453–456.

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Revision of the genera *Anaedus*, *Dichastops*, *Luprops* and *Sphingocorse* from South Africa and adjacent regions, with description of *Capeluprops* n. gen. (Coleoptera: Tenebrionidae: Lagriinae: Lupropini)[1]

Wolfgang Schawaller

Abstract

A revision of the species of the genera *Dichastops* Gerstaecker, 1871, *Luprops* Hope, 1833, *Anaedus* Blanchard, 1845 and *Sphingocorse* Gebien, 1921 (Tenebrionidae: Lagriinae: Lupropini) from South Africa and Namibia is presented. All species are illustrated, a key to the genera is added and distribution maps are provided. *Capeluprops* **n. gen.** is described and a key to the species of this genus is presented. The new genus *Capeluprops* has an allopatric distribution range exclusively in the Cape Region of South Africa. The wingless, newly described species have restricted distribution ranges, partly sympatric, in mature forests or alpine zones of certain mountain ranges. – New species: *Capeluprops amatolicus* **n. sp.**, *C. laenoides* **n. sp.** (type species), *C. laticollis* **n. sp.**, *C. montanus* **n. sp.**, *C. pondocus* **n. sp.**, *C. silvaticus* **n. sp.**, *Sphingocorse maculipennis* **n. sp.** – New synonymies: *Dichastops subaeneus* Gerstaecker, 1871 (*Dichastops mashunus* Peringuey, 1904 **n. syn.**), *Luprops concinnus* (Fåhraeus, 1870) (*Lyprops breviusculus* Gerstaecker, 1871 **n. syn.**, *Luprops pilosus* Müller, 1887 **n. syn.**, *Lyprops mosambicus* Péringuey, 1904 **n. syn.**). – New combination: *Luprops congoanus* (Kolbe, 1889) **n. comb.** from *Dichastops*.

Keywords: Coleoptera, Tenebrionidae, Lupropini, *Anaedus*, *Capeluprops* n. gen., *Dichastops*, *Luprops*, *Sphingocorse*, new species, new genus, South Africa, Namibia.

Zusammenfassung

Eine Revision der Arten aus den Gattungen *Dichastops* Gerstaecker, 1871, *Luprops* Hope, 1833, *Anaedus* Blanchard, 1845 und *Sphingocorse* Gebien, 1921 (Tenebrionidae: Lagriinae. Lupropini) aus Südafrika und Namibia wird vorgestellt. Alle Arten werden abgebildet, ein Bestimmungsschlüssel der Gattungen wird beigefügt und die Verbreitungsgebiete werden auf Karten dargestellt. *Capeluprops* **n. gen.** wird beschrieben und ein Bestimmungsschlüssel für die Arten dieser Gattung wird gegeben. Die neue Gattung *Capeluprops* hat eine allopatrische Verbreitung ausschließlich in der Kapregion von Südafrika. Die flügellosen, neu beschriebenen Arten besitzen begrenzte Verbreitungsgebiete, teilweise sympatrisch, in ursprünglichen Wäldern oder in der alpinen Zone gewisser Bergzüge. – Neue Arten: *Capeluprops amatolicus* **n. sp.**, *C. laenoides* **n. sp.** (Typusart), *C. laticollis* **n. sp.**, *C. montanus* **n. sp.**, *C. pondocus* **n. sp.**, *C. silvaticus* **n. sp.**; *Sphingocorse maculipennis* **n. sp.** – Neue Synonyme: *Dichastops subaeneus* Gerstaecker, 1871 (*Dichastops mashunus* Peringuey, 1904 **n. syn.**), *Luprops concinnus* (Fåhraeus, 1870) (*Lyprops breviusculus* Gerstaecker, 1871 **n. syn.**, *Luprops pilosus* Müller, 1887 **n. syn.**, *Lyprops mosambicus* Péringuey, 1904 **n. syn.**). – Neue Kombination: *Luprops congoanus* (Kolbe, 1889) **n. comb.** von *Dichastops*.

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[1] Contributions to Tenebrionidae, no. 88. – For no. 87 see: Annals of the Ditsong National Museum of Natural History 1 (2010).

1 Introduction

The only comprehensive study on the tenebrionid tribe Lupropini Ardoin, 1958 (subfamily Lagriinae) in Africa, including a key to the genera, has been published by Gebien (1921). However, this paper only dealt with the fauna of tropical western and central Africa. The larger genera of Lupropini in eastern and southern Africa have never been summarized; only single descriptions or redescriptions exist (Ardoin 1969, 1973, 1976; Ferrer 1995, 2004; Kaszab 1969; Peringuey 1904; Pic 1918). In the present paper, the first review of the species of the genera *Dichastops* Gerstaecker, 1871, *Luprops* Hope, 1833, *Anaedus* Blanchard, 1845 and *Sphingocorse* Gebien, 1921, at least from South Africa and Namibia, is presented. In addition, the description of *Capeluprops* n. gen. with six new species from the Cape Region of South Africa is included. Some species and records from the adjacent eastern Africa, and a few from western tropical Africa are also dealt with for comparison. A few smaller genera of Lupropini from Africa and Madagascar have already been treated separately (*Mimocellus* Wasmann, 1904: Schawaller 2005; *Terametus* Motschulsky, 1869: Schawaller 2007a; *Antennoluprops* Schawaller, 2007: Schawaller 2007b).

Taxa from the Pic collection in MNHN have not been available for this study and must remain doubtful. The status of the genus *Basanaedus* Pic, 1917 with three species from western Africa and one species from eastern Africa also remains unknown.

The species of the known genera *Anaedus*, *Dichastops*, *Luprops* and *Sphingocorse* are soil dwellers in tree-rich habitats and are adapted also to extreme dry conditions (personal observations). All known species have fully developed wings and thus possess a high ability for dispersal in wider ranges across South Africa. Specimens are usually collected by sifting litter and similar substrates, and are also attracted by light. These genera often occur sympatrically in northern and eastern South Africa. The South African distribution of all genera treated herein are mapped (Fig. 1).

On the contrary, the new genus *Capeluprops* n. gen. has an allopatric distribution range in the Cape Region of South Africa. The six wingless species described herein possess restricted (?relict) areas, partly sympatric, in mature forests or alpine zones of certain mountain ranges (Fig. 2). It would be interesting to collect more specimens in all adequate habitats of the Cape Region and also to use molecular data for an interpretation of the origin of the fauna in general in this peculiar zoogeographical area. Because of the absence of wings, the species of *Capeluprops* n. gen. do not appear at light, most of them are collected only by sifting or by turning stones.

The distribution data in this paper are not just cited from the labels but are partly completed by actual political names, by additional data for a better localization, and are translated in some cases from other languages into English.

Acronyms of depositories

BMNH	The Natural History Museum, London
CRGT	Collection Dr. Roland Grimm, Tübingen
HNHM	Hungarian Natural History Museum, Budapest
MNB	Museum für Naturkunde, Berlin
NHMB	Naturhistorisches Museum, Basel
SMNS	Staatliches Museum für Naturkunde, Stuttgart
TMSA	Transvaal Museum, Pretoria

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Dr. Roland Grimm (Tübingen), Dr. Ottó Merkl (Budapest), Ruth Müller (Pretoria), Dr. Eva Sprecher (Basel) and Dr. Manfred Uhlig (Berlin) kindly supported this study by hospitality and by the loan of specimens from the collections under their care. Additionally, Ruth Müller supplied me with literature from the library of the Transvaal Museum. Namibian and South African authorities provided permits for multiple own field work in these countries in cooperation with the Transvaal Museum. Johannes Reibnitz (Stuttgart) prepared the photographs by using a Leica DFC 480 digital camera on a Leica MZ16 APO microscope, and subsequently processed the digital photographs using Leica LAS software. Dr. Roland Grimm and Dr. Ottó Merkl as referees improved the manuscript by their comments.

2 Key to the treated genera of Lupropini from South Africa and Namibia

The genera of Lupropini have never been analysed phylogenetically. So far the following characters are considered diagnostic: eye shape, shape of pronotum and pronotal margin, articulation between pronotum and elytra, presence or absence of long dorsal setation, length of basal tarsomere of posterior leg.

For other genera of African Lupropini (e. g. *Enicmosoma*, *Mimocellus*, *Terametus*) see also the key presented by Gebien (1921).

1 Eyes completely divided by a broad epistomal canthus. ..... ***Dichastops***

– Eyes not divided. **2**

2 Pronotum distinctly narrower than elytra, pronotal disc convex up to the lateral margin, pronotal lateral margins without dentation (Figs. 15–21). ..... ***Luprops***

– Pronotum as wide as elytra, flattened laterally, pronotal lateral margins either smooth or with dentation (Figs. 3–13, 22–27). **3**

3 Lateral margins of pronotum dentate, dorsal side with long distinct setation (Figs. 12, 13). ..... ***Sphingocorse***

– Lateral margins of pronotum smooth (exept *Anaedus seraticollis*, Fig. 11), dorsal side without visible setation or at most with microsetation not longer than diameter of punctures. **4**

4 Basal margin of elytra (including scutellum) distinctly bent downward, not level to elytral disc, shoulders prominent,

lateral margin of elytra not visible from above even at shoulders, articulation betweeen pronotum and elytra loose; basal tarsomere of posterior leg not prolonged, as long as following tarsomeres combined. – Figs. 22–27.....
.....***Capeluprops* n. gen.**

– Basal margin of elytra level to elytral disc, shoulders rounded, lateral margin of elytra at least in part visible from above, articulation between pronotum and elytra solid; basal tarsomere of posterior leg prolonged, longer than following tarsomeres combined. – Figs. 3–11. ..... ***Anaedus***

3 Taxonomy

3.1 *Anaedus* Blanchard, 1845

Anaedus camerunus Gebien, 1921
(Figs. 3, 28, 29)

New material: Liberia, Nimba Prov., Saclepa, 26.–27.III.1988, leg. F.-T. Krell, 2 ex. SMNS. – Nigeria, Ile-Ife, 7.–19.VII.1988, leg. F.-T. Krell, 8 ex. SMNS. – Ivory Coast, Adiopoduomé, 8.IV.1988, leg. F.-T. Krell, 6 ex. SMNS. – Ghana, Ashanti Region, Kumasi, Nhiasu, 330 m, 1967–1968, leg. S. Endrődy-Younga, 7 ex. TMSA, 2 ex. SMNS. – Ghana, Volta Region, Kew, 20.III.1986, leg. M. Hiermeier, 1 ex. CRGT. – Uganda, Kabarole, Kibale Forest NP, Kanyawara, 1400 m, VIII.1997, leg. C. Häuser, 1 ex. SMNS. – Cameroon, North-West Prov., Big Babanki, 1200 m, 5.–13.III.2008, leg. M. Říha, 1 ex. SMNS.

Type locality: "Kamerun".

Distribution: Tropical Africa (still unknown from South Africa).

Anaedus decellei Ardoin, 1969
(Figs. 4, 34, 35)

New material: Guinea, Coyah, 15.III.–15.VI.1969, leg. K. Ferencz, 1 ex. TMSA (det. Kaszab). – Nigeria, Nsukka, 19.–22.VII.1988, leg. F.-T. Krell, 3 ex. SMNS. – Togo, Avétonou, 130–150 m, 16.VI.1988, leg. F.-T. Krell, 2 ex. SMNS.

Remarks: This species is quite similar in external characters to the allopatric species *A. leleupi* Ardoin, 1976 from eastern and southern Africa (Figs. 4, 8), but the aedeagi are different (Figs. 34, 35, 42, 43).

Type locality: "Côte d'Ivoire, Man".

Distribution: Western Africa.

Anaedus expansicollis Gebien, 1913
(Figs. 5, 32, 33)

Type material: W "Albert-See" (Albert Lake), Route Mawambi/Awakubi at Aruwimi, 20.IV.1908, Expedition Herzog A. F. zu Mecklenburg, ♀ paratype in bad condition MNB (97591).

New material: Tanzania, W Usambara, II.1912, 1 ♀ MNB (det. Gebien). – Zaire, Haut Ituri, 1750 m, V.–XII.1976, leg. F. Schäuffele, 3 ex. SMNS. – W Kenya, Kaimosi, III.–IV.1932, leg. A. Turner, 1 ex. TMSA (det. Blair). – Kenya, Nairobi, 5500 ft., without date, 1 ex. TMSA (det. Bruyant).

Remarks: Gebien (1913) selected a holotype from the type series. The species is characterized by its sexual dimorphism (which is not mentioned by Gebien in the original description): the frons between the eyes is distinctly narrower in males than in females.

Type locality: "Usambara" [Tanzania].

Distribution: Tropical Africa (still unknown from South Africa).

Anaedus explanatus Pic, 1917
(Figs. 6, 30, 31)

syn. *Anaedus diversithorax* Pic, 1917 (Ardoin 1969).
syn. *Anaedus niger* Pic, 1932 (Ardoin 1969).

New material: Ivory Coast, Bingerville, XI.1961, leg. J. Decelle, 1 ex. TMSA (det. Ardoin). – Ivory Coast, Abidjan, 8.IX.1988, leg. B. Fruth, 1 ex. CRGT. – Guinea, Seredou, 5.IV.1975, leg. A. Zott, 3 ex. MNB. – Togo, "Bismarckburg", 1891, leg. R. Büttner, 4 ex. MNB. – Cameroon, S Kribi, Rocher du Loup, 17.XII.1980, leg. F. Ferrara, 1 ex. CRGT. – C Kenya, Nanyuki, Lewa Down NP, 1850 m, 19.XI.2003, leg. A. Puchner, 1 ex. SMNS. – W Kenya, Kagamega Forest NR, 1600 m, 18.IX.–17.X.2001, leg. L. Kühne & J. Holstein, 4 ex. MNB. – W Kenya, Kagamega Forest NR, Buyango Hill, 1600 m, 30.I.2004, leg. J. Holstein & A. Zahm, 9 ex. SMNS. – W Kenya, Kagamega Forest NR, 1600 m, 21.IX.–10.X.2005, leg. D. Bartsch & J. Holstein, 21 ex. SMNS, 5 ex. TMSA. – Tanzania, Amani, IV.1961, leg. H. E. Paterson, 1 ex. TMSA. – Zimbabwe, Mt. Selinda, 5.II.1980, leg. C. Owen, 1 ex. TMSA. – Mozambique, Sofala Prov., Mt. Gorongosa, 1.XII.2006, leg. S. Gussmann & R. Müller, 1 ex. TMSA. – Mozambique, Zambezia Prov., Gurué, Mt. Namuli, 9.XII.2006, leg. P. Schüle, 1 ex. SMNS. –South Africa, Durban, 6.VIII.1960, leg. G. C. Dickson, 1 ex. TMSA. – South Africa, Zululand, Dukuduku Forest Station, 7.IV.1974, leg. S. Endrődy-Younga, 11 ex. TMSA, 3 ex. SMNS. – South Africa, Zululand, Hluhluwe Game Reserve, 20.XI.1992, leg. S. Endrődy-Younga, 1 ex. TMSA. – South Africa, S Natal, Weza/Lovedale, 9.III.1985, leg. S. Endrődy-Younga, 3 ex. TMSA. – South Africa, KwaZulu-Natal, Howick, Umgeni, Lions River Distr., X.1961, leg. N. Leleup, 1 ex. TMSA. – South Africa, KwaZulu-Natal, Port Shepstone, XII.1961, leg. N. Leleup, 2 ex. TMSA. – South Africa, KwaZulu-Natal, St. Lucia, 7.–8.II.2004, leg. P. Hlaváč, 1 ex. SMNS. – South Africa, KwaZulu-Natal, Vryheid, 29.–31.XII.2008, leg. P. Schüle, 1 ex. SMNS. – South Africa, KwaZulu-Natal, Vryheid, 30.XII.2008, leg. S. Gussmann & R. Müller, 1 ex. TMSA. – South Africa, KwaZulu-Natal, Ngome Forest, 27.I.2008, leg. P. Schüle, 1 ex. SMNS.

Type locality: "Côte d'Ivoire".

Distribution: Widespread in tropical Africa, Mozambique (new record), South Africa (new record: KwaZulu-Natal).

Anaedus leleupi Ardoin, 1976
(Figs. 8, 42, 43)

Type material: Tanzania, Mts. Uruguru, Morogoro Campus, 600 m, V.–VI.1971, leg. L. Berger, N. Leleup & J. Debecker, 1 ♂ paratype HNHM.

New material: C Kenya, Nanyuki, Lewa Down NP, 1850 m, 19.XI.2003, leg. A. Puchner, 1 ex. SMNS. – Kenya, Rift Valley, Matthews Range, 35 km N Wamba, 1300–1400 m, 7.–12.XII.2002, leg. D. Bartsch & C. Häuser, 2 ex. SMNS. – S Malawi, Balaka, 19.–20.XII.2001, leg. J. Bezděk, 2 ex. SMNS. – Zambia, Copperbelt, NW Kapiri Mposhi, 8.XII.2002, leg. F. Kantner, 1 ex. SMNS. – Zambia, 150 km S Kasempa, 11.XI.2002, leg. F. Wachtel, 1 ex. CRGT. – Tanzania Prov., Morogoro, Vomoro Distr., Wami, 8.–30.XII.2007, leg. C. Jorom, 1 ex. SMNS. – Tanzania, Morogoro Prov., Uruguru (labelled Uluguru) Mt., Kigulunyembe, 10.–16.IV.2007, leg. C. Jorom, 2 ex. SMNS. – Tanzania, Morogoro Prov., 50 km SW Morogoro, 450 m, 12.I.2007, leg. F. Kantner, 10 ex. SMNS. – Tanzania, Kilimanjaro Prov., Pare Mts., I.1990, leg. K. Werner, 1 ex. TMSA. – Tanzania, 25 km W Kahama, Shinvano, 1200 m, 23.XII.2006, leg. F. Kantner, 20 ex. SMNS. – Tanzania, Pwani Prov., 70 km E Morogoro, 300 m, 12.XII.2006, leg. F. Kantner, 20 ex. SMNS. – Zimbabwe, Shangani, 60 km SW Gweru, 2.XII.1998, leg. F. Kantner, 1 ex. SMNS. – Zimbabwe, Manicaland, 20–40 km N Mutare, 25.XII.2005, leg. P. Schüle, 1 ex. SMNS. – Zimbabwe, Masvingo Prov., Lake Mutirikwe (Lake Kyle), 27.XI.2006, leg. S. Gussmann, R. Müller & P. Schüle, 1 ex. TMSA, 1 ex. SMNS. – Mozambique, Sofala Prov., Gorongosa NP, 19.XII.2005, leg. S. Gussmann & R. Müller, 1 ex. TMSA. – Mozambique, Zambezia, Gurué, 870 m, 9.XII.2006, leg. S. Gussmann & R. Müller, 1 ex. TMSA. – South Africa, Northern Province, Mpaphuli *Cycas* Reserve, 28.I.1998, leg. R. Müller, 18 ex. TMSA. – South Africa, Limpopo Prov., Kruger NP, Skukuza Research Camp, 19.II.1995, leg. S. Endrödy-Younga, 1 ex. TMSA. – South Africa, Limpopo Prov., Olifantsriver, River Lodge, 12.I.2008, leg. R. Müller, 18 ex. TMSA. – South Africa, Limpopo Prov., Linadani NR, 1200 m, 4.I.2008, leg. R. Müller, 10 ex. TMSA. – South Africa, Limpopo Prov., Linadani NR, 1200 m, 4.–6.I.2008, leg. P. Schüle, 3 ex. SMNS. – South Africa, Transvaal, Nelshoogte Galery Forest, 2.XII.1986, leg. S. Endrödy-Younga, 4 ex. TMSA. – South Africa, Transvaal, Thabazimbi, 15.–16.I.1999, leg. P. Schüle, 6 ex. SMNS. – South Africa, Transvaal, Louis Trichardt, 17.–19.I.1999, leg. P. Schüle, 7 ex. SMNS. – South Africa, Transvaal, Hans Merensky NR, 20.I.1999, leg. P. Schüle, 4 ex. SMNS. – South Africa, Transvaal, Leydsdorp, 21.–23.I.1999, leg. P. Schüle, 3 ex. SMNS. – South Africa, Transvaal, Nelspruit NR, 18.XII.1986, leg. S. Endrödy-Younga, 31 ex. TMSA. – South Africa, N Transvaal, Waterberg, Farm 223, 11.II.1976, leg. A. Strydom, 8 ex. TMSA. – South Africa, Transvaal, Naboomspruit, 15.I.1989, leg. S. Endrödy-Younga, 1 ex. TMSA. – South Africa, E Transvaal, Berlin, 4.II.1987, leg. S. Endrödy-Younga, 1 ex. TMSA. – South Africa, E Transvaal, Blyde River Canyon, 5.V.1981, leg. S. Endrödy-Younga, 1 ex. TMSA. – South Africa, E Transvaal, Klaserie, 3.V.1981, leg. S. Endrödy-Younga, 1 ex. TMSA. – South Africa, Mpumalanga, Steelport, Didingwe, 15.X.2002, leg. TMSA staff, 3 ex. TMSA. – South Africa, Mpumalanga, Hazyview, 27.I.1996, leg. S. Endrödy-Younga, 23 ex. TMSA. – South Africa, Mpumalanga, Der Brochen, 1135 m, 25.X.2000, leg. TMSA staff, 2 ex. TMSA. – South Africa, Mpumalanga, Monolomolo Forest Camp between Kampersrus and Mariepskop, 28.–31.XII.2004, leg. A. Ballerio, 1 ex. HNHM. – South Africa, Gauteng, Tswaing, 17.II.2003, leg. TMSA staff, 1 ex. TMSA. – South Africa, KwaZulu-Natal (labelled as Zululand), Dukuduku Forest Station, 2.IV.1974, leg. S. Endrödy-Younga, 2 ex. TMSA, 1 ex. SMNS. – South Africa, KwaZulu-Natal, Kosi Bay Forest, 12.XI.2002, leg. M. Burger, J. Harrison & R. Müller, 4 ex. TMSA. – South Africa, KwaZulu-Natal, 15 km S Pongola, 380 m, 30.I.2008, leg. R. Müller, 2 ex. TMSA. – South Africa, KwaZulu-Natal, 15 km S Pongola, 380 m, 1.II.2008, leg. P. Schüle, 3 ex. SMNS. – South Africa, KwaZulu-Natal, SW Magudu, 4.I.2009, leg. R. Müller, 30 ex. SMNS. – South Africa, KwaZulu-Natal, SW Magudu, 480 m, 4.–5.I.2009, leg. P. Schüle, 15 ex. SMNS. – South Africa, KwaZulu-Natal, Ndumo NR, 23.XI.2001, leg. P. Schüle, 1 ex. SMNS. – South Africa, KwaZulu-Natal, Kosi Bay NR, 11.–17.XI.2002, leg. W. Schawaller, 1 ex. SMNS. – South Africa, KwaZulu-Natal, Manguzi Forest, 15.–16.XI.2002, leg. W. Schawaller, 1 ex. SMNS. – South Africa, KwaZulu-Natal, St. Lucia, 25.VII.1997, leg. I. Meybohm, 1 ex. MNB.

Remarks: This species is quite similar in external characters to the allopatric species *A. decellei* Ardoin, 1969 from western Africa (Figs. 4, 8), but the aedeagi are different (Figs. 34, 35, 42, 43).

Type locality: "Tanzania, Morogoro".

Distribution: East and South Africa (new records: Mpumalanga, KwaZulu-Natal).

Anaedus planicollis Kaszab, 1969
(Figs. 7, 38, 39)

Type material: Congo-Brazzaville, Kindamba, Méya, Loulu River, 2.XI.1963, leg. S. Endrödy-Younga, ♂ holotype HNHM, 1 ♀ paratype TMSA.

New material: Cameroon, Malende, Meleteke River, 125 m, 18.XII.1957, leg. H. Knorr, 1 ♀ SMNS.

Type locality: "Congo-Brazzaville, Kindamba".

Distribution: Tropical Africa (still unknown from South Africa).

Anaedus serraticollis Ardoin, 1973
(Figs. 11, 40, 41)

Type material: Congo, Ruwe, Katanga, 5.IV.1964, leg. V. Allard, 1 ♂ paratype HNHM (apicale of aedeagus missing).

New material: Democratic Republic of the Congo (Congo belge), Munoi, bifurcation Lupiala, 890 m, 31.V.–2.VI.1948, leg. G. F. de Witte, 1 ♀ TMSA. – Democratic Republic of the Congo (Congo belge), Gorges de la Pelenge, 1150 m, 10.–20.VI.1947, leg. G. F. de Witte, 1 ♂ SMNS. – Angola, no further data, 2 ex. TMSA.

Remarks: This species has a somewhat intermediate position between *Anaedus* and *Luprops* because of the shape of the pronotum with lateral dilatation and dentation and length of first tarsomeres. Its true relationship must be cleared in an extensive phylogenetic study of all genera of Lupropini.

Type locality: "Zaire, Katanga, Kasompi".

Distribution: Central Africa, Angola, Zambia (Ardoin 1973).

Anaedus striatulus Ardoin, 1973
(Figs. 10, 44, 45)

Anaedus striatipennis Ardoin, 1969 preoccupied (not *A. striatipennis* Pic, 1934).

New material: Ghana, Ashanti Region, Kwadaso, 320 m, 11.III.1969, leg. S. Endrödy-Younga, 1 ex. TMSA. – Liberia, Saclepea, 16.III.1988, leg. F.-T. Krell, 1 ex. SMNS. – Liberia, Zwedru, 2.–3.III.1988, leg. F.-T. Krell, 1 ex. SMNS.

Type locality: "Côte d'Ivoire, Koun-Abronso".
Distribution: Tropical Africa (still unknown from South Africa).

Anaedus striatus Gebien, 1921
(Fig. 9)

New material: Ghana, Ashanti Region, Kumasi, Nhiasu, 330 m, 3.–4.II.1968, leg. S. Endrödy-Younga, 2 ex. TMSA, 1 ex. SMNS. – Guinea, Seredou, 18.IV.1975, leg. A. Zott, 1 ex. MNB. – Guinea, Nkolentangan, XI.1907–V.1908, leg. G. Tessmann, 1 ex. MNB. – Cameroon (labelled as Kamerun), Longji, 1905, leg. H. Paschen, 1 ex. MNB.

Remarks: Aedeagus unknown, no males available.
Type locality: "Kamerun, Johann-Albrechtshöhe".
Distribution: Tropical Africa (still unknown from South Africa).

3.2 *Capeluprops* **n. gen.**
(Figs. 2, 22–27, 46–57)

Etymology: Combination of *Luprops*, i. e. the related genus, and the English word for Cape as the distribution area in the Cape Region of South Africa. The name is used in masculine gender.

Diagnosis: The new genus is characterized within the tenebrionid tribe Lupropini mainly by the form of the elytral base, which is distinctly bent downward including the scutellum and not level to the elytral disc, by the prominent shoulders, and by the elytral lateral margin, which is completely covered by the convexity of the elytra. Eyes reniform, not divided by epistomal canthus. Pronotum of similar width as elytra, lateral margins without dentation. Basal tarsomere of posterior leg not prolonged, as long as the following tarsomeres combined. See also key to the genera of Lupropini in South Africa in chapter 2.

Description: Body length 4.0–7.5 mm. Dorsal and ventral surfaces and all appendages dark ferruginous without metallic shine. Genae somewhat swollen but not dilated, with or without transverse impression between genae; anterior margin of clypeus straight and without excavation or other modifications; eyes reniform; maxillary palps with large securiform terminal palpomere; antenna with 11 antennomeres, antennomere 3 slightly elongate, terminal antennomeres slightly broader but not forming a loose club. Shape of pronotum specific, prosternal process not prominent. Scutellum bent downward, invisible. Hind wings absent. Elytra oval or parallel; base bent downward; shoulders prominent, lateral margin not visible from above even at shoulders; surface with irregular punctation which is occasionally arranged in irregular rows. Ventrites with extremely fine, nearly invisible punctation; terminal ventrite unbordered, without any modifications; membranes between the last 3 ventrites exposed. Tibiae slightly clavate, without external keels; tibial spurs minute; all tarsomeres short. Aedeagus with long basale and triangular apicale (Figs. 46–57). No distinct external sexual dimorphism.

Species included: *C. laenoides* n. sp. (type species by present designation), *C. amatolicus* n. sp., *C. laticollis* n. sp., *C. montanus* n. sp., *C. pondocus* n. sp., *C. silvaticus* n. sp.

Species identification: It is not easy to separate the species only by morphological characters, especially as the shape of the aedeagus is similar in all species (Figs. 46–57). For identification compare Figs. 22–27. The knowledge of the geographical distribution may also help (compare map Fig. 2). As long as no intermediate forms are known, I consider the six species described herein as separated by the combination of the following characters: body size, shape of elytra and pronotum, extent of lateral pronotal borders, density of the dorsal punctation, and extent of the impression between the genae of the head.

Distribution: Restricted to the Cape Region in South Africa, allopatric to the distribution range of *Luprops* and other genera of the Lupropini which are distributed in northern and eastern South Africa (maps see Figs. 1, 2).

Capeluprops amatolicus **n. sp.**
(Figs. 22, 46, 47)

Holotype (♂): South Africa, Eastern Cape, Hogsback, 1300 m, 3.II.2004, leg. P. Hlaváč, SMNS.

Paratypes: Same data as holotype, 9 ex. SMNS, 4 ex. TMSA. – South Africa, Eastern Cape (labelled as C. P.), Hogsback, Amatola Mts., II.1933, leg. R. F. Lawrence, 3 ex. TMSA. – South Africa, Eastern Cape, N Fort Beaufort, Fort Fordyce NR, sifted forest litter, 1000 m, 3.–5.XII.2007, leg. W. Schawaller, 1 ex. SMNS. – South Africa, Eastern Cape, N Fort Beaufort, Fort Fordyce NR, sifted forest litter, 1000 m, 5.XII.2007, leg. R. Müller, 5 ex. TMSA.

Etymology: Named after the Amatola Mountains in South Africa, where the holotype was collected.

Description: Body length 5.0–6.0 mm. Dorsal and ventral surfaces and all appendages dark ferruginous

without metallic shine; punctures on dorsal side without microsetae, only around shoulders with some longer setae; dorsal surface between punctures shining (Fig. 22). Head with punctation similar to that on pronotum; genae somewhat swollen but not dilated, no distinct transverse impression between genae, punctures with longer setae; anterior margin of clypeus straight and without excavation or other modifications; eyes reniform and not distinctly excavated by epistomal canthus; maxillary palps with large securiform terminal palpomere; antenna with 11 antennomeres, shape of the antennomeres see Fig. 22, antennomere 3 slightly elongate, terminal antennomeres slightly broader but not forming a loose club. Pronotum cordiform, widest in the middle, anterior margin laterally bordered, lateral margins completely finely bordered, posterior margin unbordered, lateral margins not crenulate, anterior corners slightly protruding, posterior corners rounded, surface flat with irregular punctation, punctures of same size as on head and elytra; propleura smooth and with a few punctures, prosternal process not prominent. Scutellum bent downward, invisible. Hind wings absent. Elytra elongate parallel-sided, widest behind the middle, lateral margin not visible from above even at shoulders, shoulders prominent; surface with irregular punctation sometimes arranged in irregular rows; epipleura without a distinct row of punctures. Ventrites with extremely fine, nearly invisible punctation, punctures with microsetae, surface feebly chagreened; terminal ventrite unbordered; membranes between the last 3 ventrites visible. Legs without particular modifications, tibiae slightly clavate, without external keels, tibial spurs minute, all tarsomeres short. Aedeagus (Figs. 46, 47) with long basale and triangular apicale. No distinct external sexual dimorphism.

Diagnosis: This new species is distinguished by its longer and parallel-sided elytra, the cordiform pronotum with slightly protruding anterior corners, the relatively coarse dorsal punctation and the bordered lateral margins of the pronotum. *C. pondocus* n. sp. is similar, but is somewhat smaller in the average, the anterior corners of the pronotum are completely rounded and not protruding, and the elytra are shorter and broader (compare Figs. 22, 25). See also under diagnosis of *C. laenoides* n. sp.

Capeluprops laenoides **n. sp.**
(Figs. 23, 48, 49)

Holotype (♂): South Africa, Cape Town, Table Mountain, Doline Bats Cave, "Humus", XI.–XII.1960, leg. N. Leleup, TMSA.

Paratypes: Same data as holotype, 4 ex. TMSA. – South Africa, Cape Town, Table Mountain, Orange Kloof, XII.1960, leg. N. Leleup, 2 ex. TMSA, 3 ex. SMNS. – South Africa, Cape Town, Table Mountain, Orange Kloof, III.1928, leg. K. H. Barnard & A. Hesse, 1 ex. TMSA. – South Africa, Cape Town, Table Mountain, Echo Valley, XI.1960, leg. N. Leleup, 2 ex. TMSA. – South Africa, Cape Town, Table Mountain, Constancia, XII.1960, leg. N. Leleup, 1 ex. TMSA. – South Africa, Cape Town, Kirstenbosch, XI.1960, leg. N. Leleup, 3 ex. TMSA. – South Africa, Cape Town, Kirstenbosch, 3.XI.1953, leg. Peez, 2 ex. TMSA. – South Africa, Cape Town, Kirstenbosch, Botanical Garden, sifted leaf litter, 2.III.2001, leg. G. Geginat, 1 ex. SMNS. – South Africa, Cape Peninsula, Silvermine NR, wet litter, 2.–3.I.1972, Southern Africa Exp., 4 ex. BMNH. – South Africa, Cape Town, V.1901, leg. Purcell, 1 ex. TMSA. – South Africa, Cape Town, leg. Martin, 1 ex. HNHM. – South Africa, Cape Town, Table Mountain, 1975, leg. H. Franz, 1 ex. HNHM. – South Africa, Western Cape, Dwarsberg, Hottentots Holland, sifted fynbos litter, 750 m, 3.XII.2002, leg. G. Geginat, 1 ex. SMNS. – South Africa, Western Cape, Dwarsberge, *Procavia* dung, 15.XI.1973, leg. S. Endrödy-Younga, 3 ex. TMSA, 1 ex. SMNS.

Etymology: The name refers to the body shape similar to the tenebrionid genus *Laena*.

Description: Body length 5.5–7.5 mm. Dorsal and ventral surfaces and all appendages dark ferruginous without metallic shine; punctures on dorsal side without microsetae, only in lateral part with a few longer setae; dorsal surface between punctures shining (Fig. 23). Head with punctation similar to that on pronotum; genae somewhat swollen but not dilated, no distinct transverse impression between genae, punctures with longer setae; anterior margin of clypeus straight and without excavation or other modifications; eyes reniform and not distinctly excavated by epistomal canthus; maxillary palps with large securiform terminal palpomere; antenna with 11 antennomeres, shape of the antennomeres see Fig. 23, antennomere 3 slightly elongate, terminal antennomeres slightly broader but not forming a loose club. Pronotum cordiform, widest in the middle, anterior margin laterally bordered, lateral margins marked but unbordered, posterior margin unbordered, lateral margins not crenulate, anterior corners slightly protruding, posterior corners rounded, surface flat with irregular punctation, punctures of same size as on head and elytra; propleura smooth and with a few punctures, prosternal process not prominent. Scutellum bent downward, invisible. Hind wings absent. Elytra elongate, parallel-sided, widest behind the middle, lateral margin not visible from above even at shoulders, shoulders prominent; surface with irregular punctation; epipleura without a distinct row of punctures. Ventrites with extremely fine, nearly invisible punctation, punctures with microsetae, surface feebly chagreened; terminal ventrite unbordered; membranes between the last 3 ventrites visible. Legs without particular modifications, tibiae slightly clavate, without external keels, tibial spurs minute, all tarsomeres short. Aedeagus (Figs. 48, 49) with long basale and triangular apicale. No distinct external sexual dimorphism.

Diagnosis: This species is characterized by its large body size, the longer and parallel-sided elytra, the

cordiform pronotum with slightly protruding anterior corners, and the marked but unbordered lateral margins of the pronotum. *C. amatolicus* n. sp. is similar, but that species is somewhat smaller in the average, the lateral margin of the pronotum is distinctly bordered, and the elytral punctation is coarser. See also under diagnosis of *C. montanus* n. sp.

Capeluprops laticollis **n. sp.**
(Figs. 27, 54, 55)

Holotype (♂): South Africa, Western Cape (labelled Cape), Langeberg (labelled as Langebeg), Ruiterbos Forest Station, under stones, 4.XI.1993, leg. S. Endrödy-Younga, TMSA.

Paratypes: Same data as holotype, 14 ex. TMSA, 4 ex. SMNS. – South Africa, Little Karroo, N Kamanasiberg, flowering *Galenia*, 2.XI.1993, leg. S. Endrödy-Younga, 1 ex. TMSA. – South Africa, Western Cape, near Kleinmond, 500–1000 ft., II.1927, leg. K. H. Barnard, 1 ex. TMSA. – South Africa, Western Cape, Dwarsberg, Hottentots Holland, sifted forest litter, 750 m, 3.XII.2002, leg. G. Geginat, 2 ex. SMNS. – South Africa, Western Cape (labelled as S. Cape), Mt. Helderfontein, sifted fynbos litter, 1150 m, leg. S. Endrödy-Younga, 2 ex. TMSA.

Etymology: The name is derived from the broad pronotum.

Description: Body length 4.5–6.3 mm. Dorsal and ventral surfaces and all appendages dark ferruginous without metallic shine; punctures on dorsal side without microsetae, dorsal surface between punctures shining (Fig. 27). Head with punctation coarser than on pronotum, punctation sometimes confluent; genae somewhat swollen but not dilated, with distinct transverse impression between genae, punctures in impression with long setae; anterior margin of clypeus straight and without excavation or other modifications; eyes reniform and not distinctly excavated by epistomal canthus; maxillary palps with large securiform terminal palpomere; antenna with 11 antennomeres, shape of the antennomeres see Fig. 27, antennomere 3 slightly elongate, terminal antennomeres slightly broader but not forming a loose club. Pronotum subrectangular,

Fig. 1. Distribution areas (idealized) of the genera *Anaedus* (2 species), *Capeluprops* n. gen. (6 species), *Dichastops* (1 species), *Luprops* (4 species) and *Sphingocorse* (1 species) in South Africa.

Fig. 2. Collecting localities of the species of *Capeluprops* n. gen. in the Cape Region of South Africa.

widest in posterior third, anterior margin finely bordered, lateral and posterior margins unbordered, lateral margins not crenulate, anterior corners slightly protruding, posterior corners rounded, surface flat with irregular punctation, punctures smaller than on head but of same size as on elytra, but punctation somewhat denser than on elytra; propleura smooth without punctures or wrinkles, prosternal process not prominent. Scutellum bent downward, invisible. Hind wings absent. Elytra elongate oval, widest in the middle, lateral margin not visible from above even at shoulders, shoulders prominent; surface with irregular punctation not arranged in rows or striae; epipleura without punctation but basally somewhat uneven. Ventrites with extremely fine, nearly invisible punctation, punctures with microsetae, surface feebly chagreened; terminal ventrite unbordered; membranes between the last 3 ventrites visible. Legs without particular modifications, tibiae slightly clavate, without external keels, tibial spurs minute, all tarsomeres short. Aedeagus (Figs. 54, 55) with long basale and triangular apicale. No distinct external sexual dimorphism.

D i a g n o s i s : This species differs in its short and broad elytra, the broad, subrectangular and flat pronotum, the relatively fine dorsal punctation and the unbordered lateral margins of the pronotum (Fig. 27). *C. silvaticus* n. sp has a similar broad pronotum, but in that species the lateral margin of the pronotum is bordered, the dorsal punctation is coarser, and the head has no impression between the genae (Fig. 26).

Capeluprops montanus **n. sp.**
(Figs. 24, 56, 57)

H o l o t y p e (♂): South Africa, Western Cape (labelled as S. Cape), Swartberg Pass, sifted, 1770 m, 1.VIII.1979, leg. Breytenbach, TMSA.

P a r a t y p e s : Same data as holotype, 3 ex. TMSA, 2 ex. SMNS. – South Africa, Western Cape, Wellington, Sneeuwkop, 3000–4000 ft., V.1922, leg. K. H. Barnard, 1 ex. TMSA. – South Africa, Western Cape, Wellington, Hawequas, sifted litter, 5.XI.1973, leg. S. Endrödy-Younga, 2 ex. TMSA. – South Africa, Swartberg Pass, 1600 m, 14.VIII.1975, leg. G. J. Minet, 3 ex. NHMB.

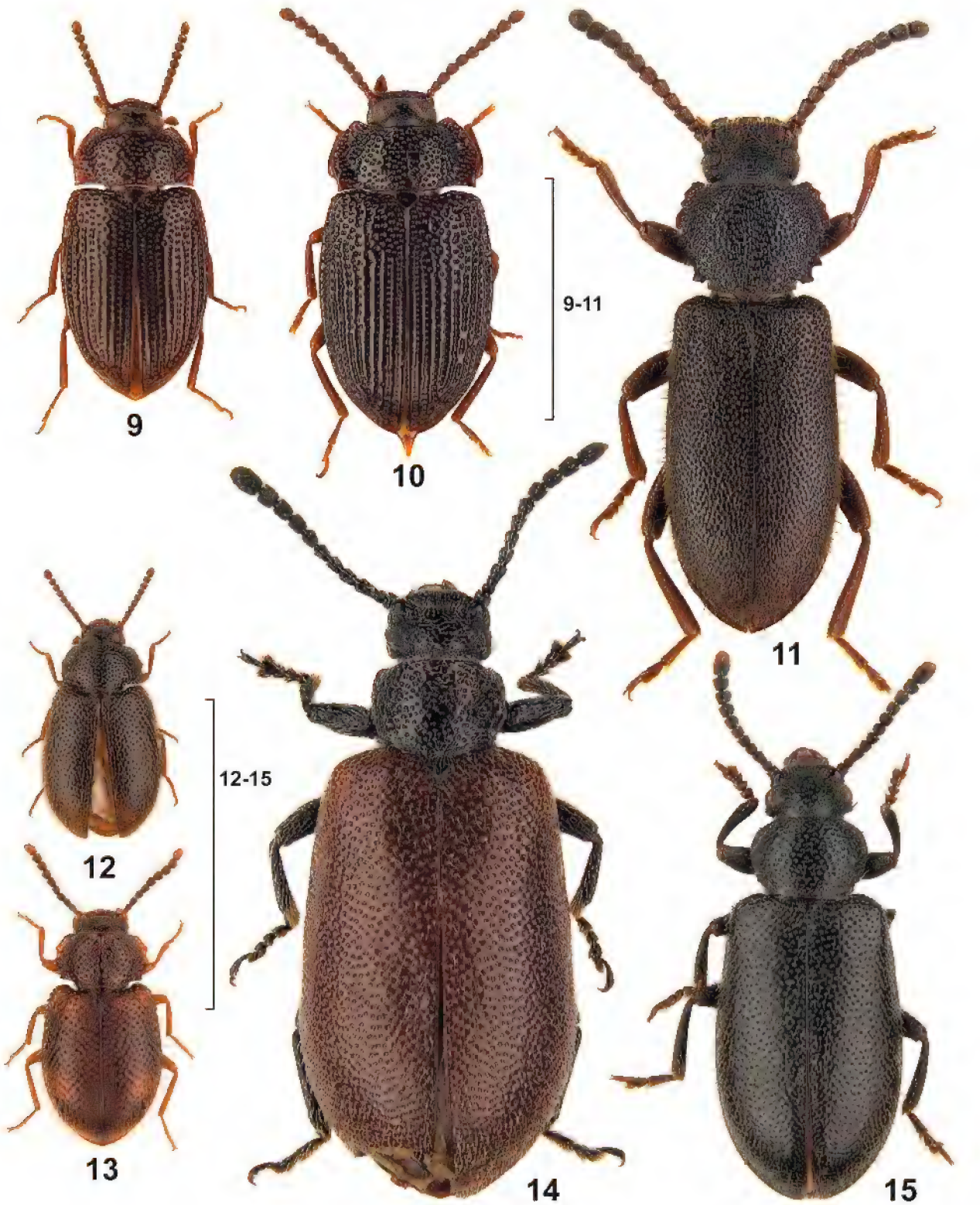
E t y m o l o g y : The name refers to the high altitude of the type locality in the Swartberge Mountains.

D e s c r i p t i o n : Body length 4.0–5.3 mm. Dorsal and ventral surfaces and all appendages dark ferruginous without metallic shine; punctures on dorsal side without microsetae, only in lateral part with a few longer setae; dorsal surface between punctures shining (Fig. 24). Head with punctation similar to that on pronotum; genae somewhat swollen but not dilated, no distinct transverse impression between genae, punctures with longer setae; anterior margin of clypeus straight and without excavation or other modifications; eyes reniform and not distinctly excavated by epistomal canthus; maxillary palps with large securiform terminal palpomere; antenna with 11 antennomeres, shape of the antennomeres see Fig. 24, antennomere 3 slightly elongate, terminal antennomeres slightly broader but not forming a loose club. Pronotum subquadrate, widest in the middle, anterior margin laterally bordered, lateral margins unbordered, posterior margin unbordered, lateral margins not crenulate, anterior corners not protruding, posterior corners rounded, surface flat with irregular punctation, punctures of same size as on head and elytra; propleura smooth and with a few punctures, prosternal process not prominent. Scutellum bent downward, invisible. Hind wings absent. Elytra elongate parallel-sided, widest behind the middle, lateral margin not visible from above even at shoulders, shoulders prominent; surface with irregular punctation; epipleura without a distinct row of punctures. Ventrites with extremely fine, nearly

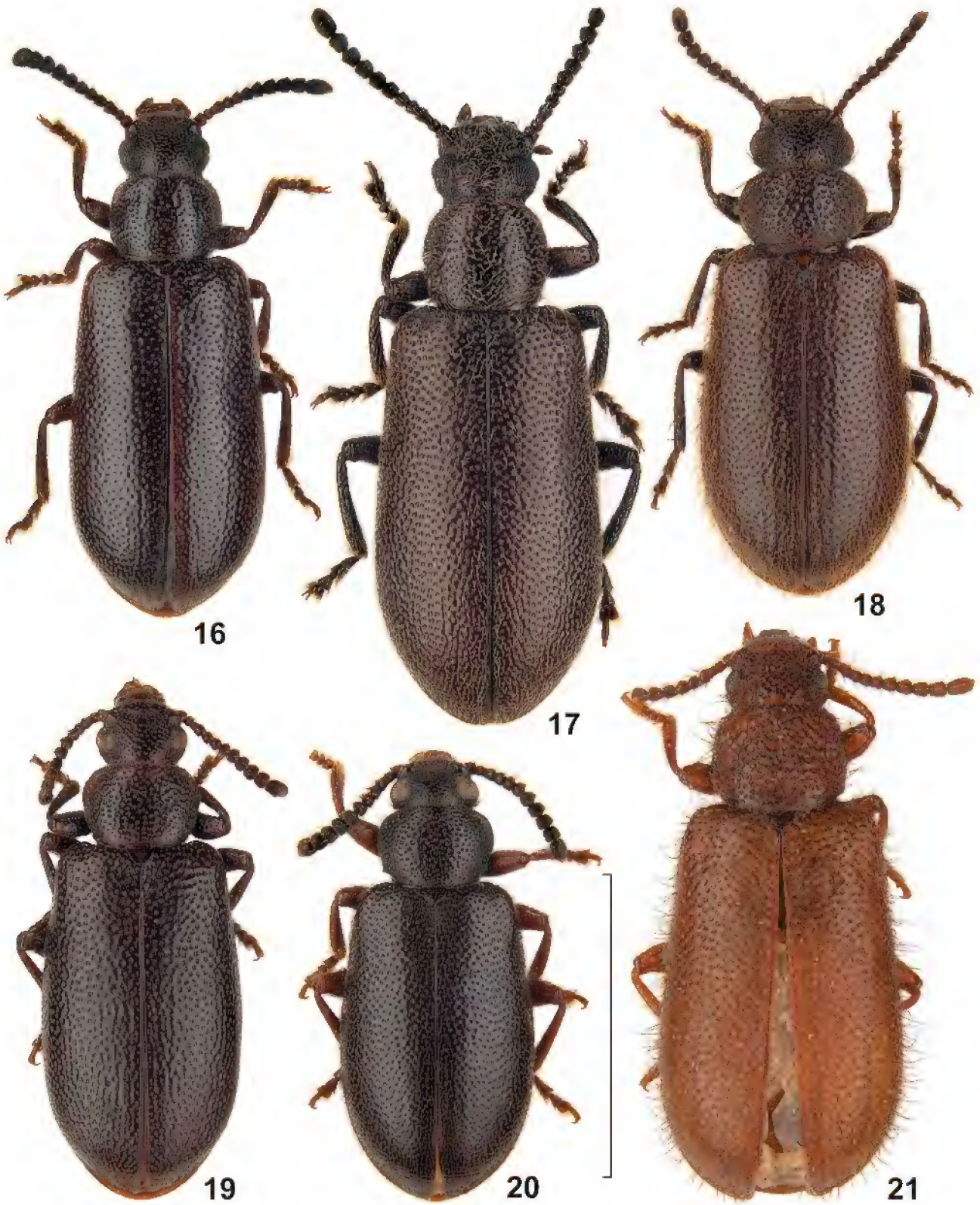
invisible punctation, punctures with microsetae, surface feebly chagreened; terminal ventrite unbordered; membranes between the last 3 ventrites visible. Legs without particular modifications, tibiae slightly clavate, without external keels, tibial spurs minute, all tarsomeres short. Aedeagus (Figs. 56, 57) with long basale and triangular apicale. No distinct external sexual dimorphism.

D i a g n o s i s : *C. montanus* is similar to *C. laenoides* n. sp., but is smaller in the average, the pronotum is subquadrate and not cordiform, the pronotal lateral margin is completely unbordered, and the dorsal puncation is coarser (compare Figs. 23, 24).

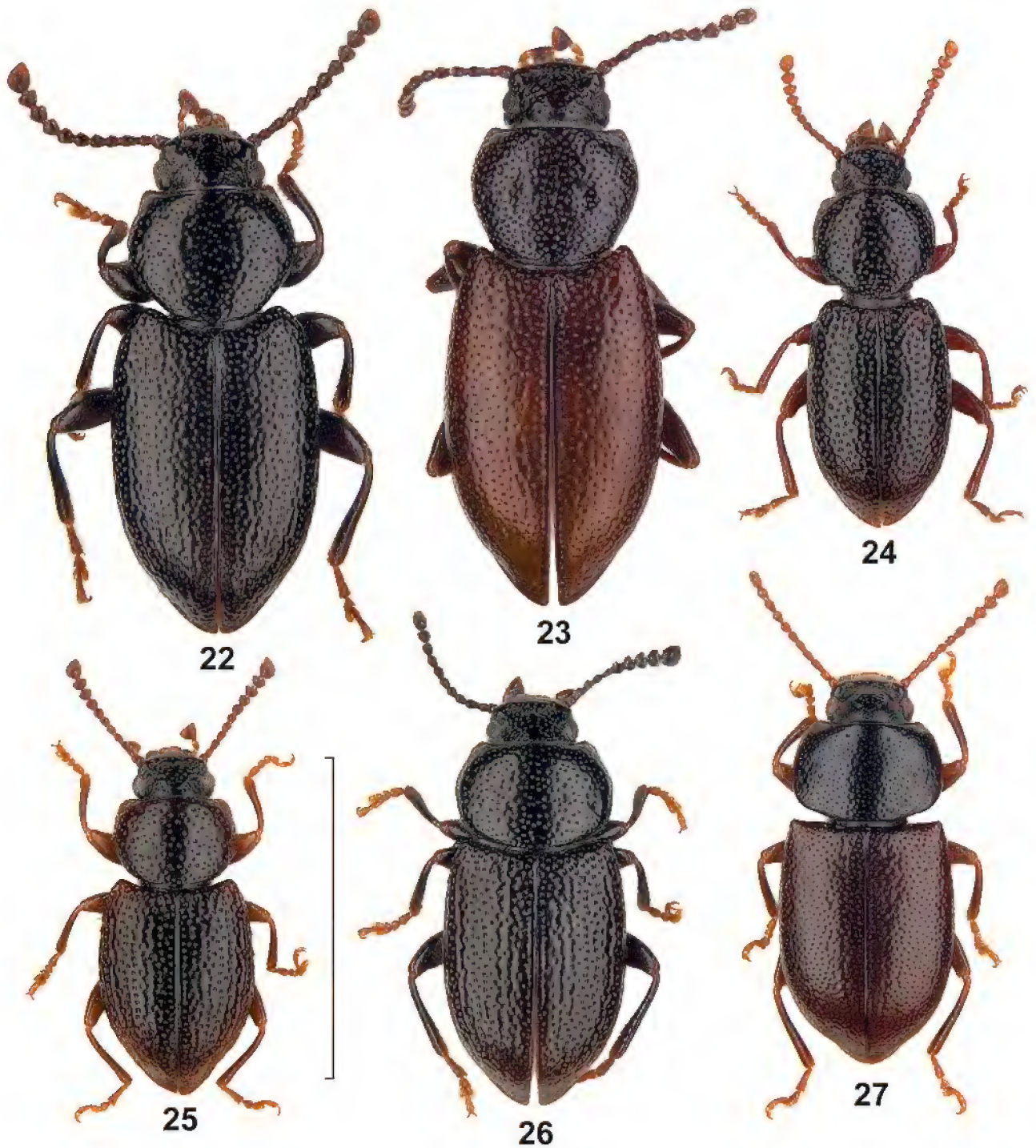
Figs. 3–8. *Anaedus* spp., dorsal views. – **3**. *A. camerunus*, non-type SMNS. **4**. *A. decellei*, non-type TMSA. **5**. *A. expansicollis*, non-type SMNS. **6**. *A. explanatus*, non-type SMNS. **7**. *A. planicollis*, holotype HNHM. **8**. *A. leleupi*, paratype HNHM. – Scale: 4 mm.



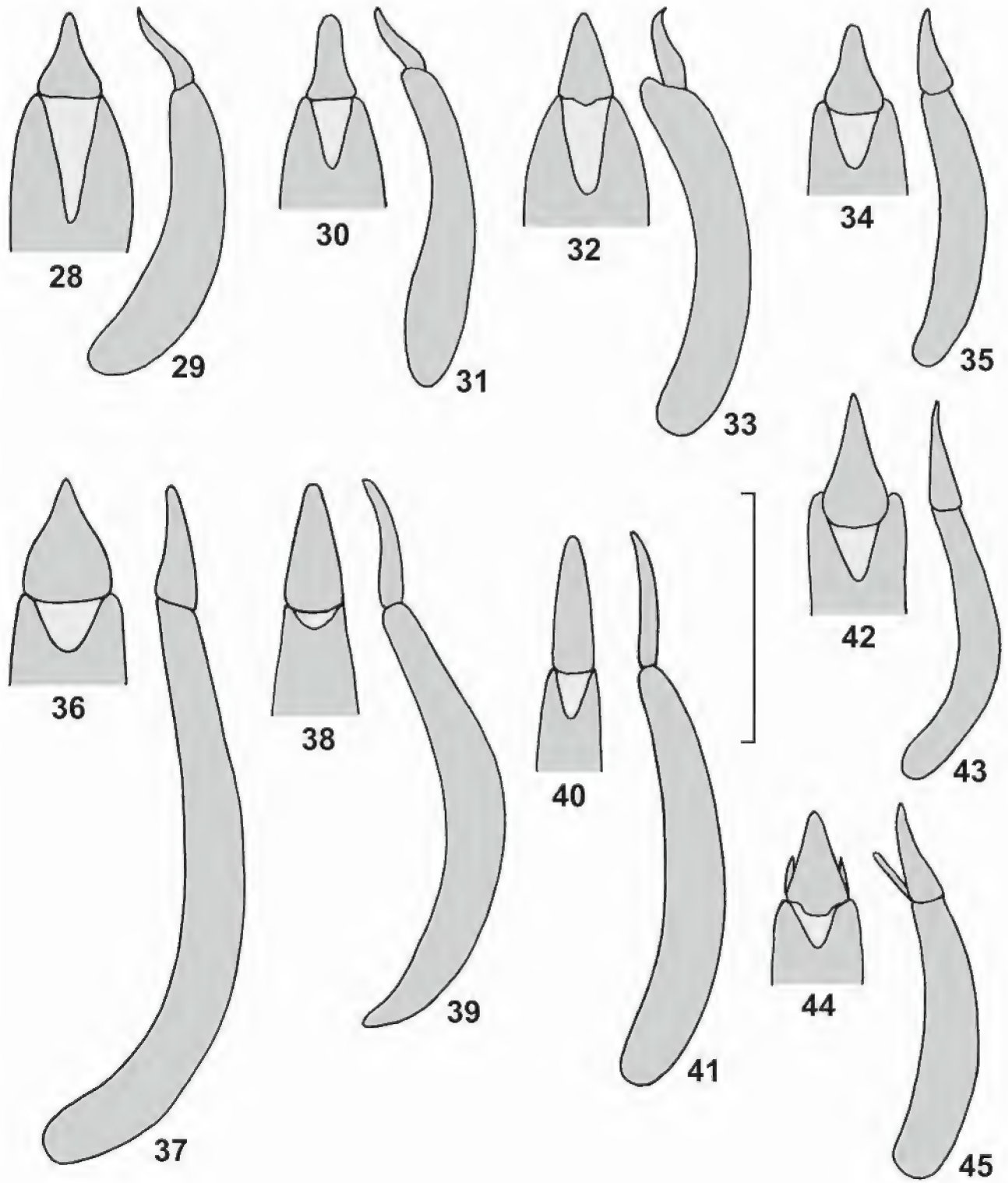
Figs. 9–15. African Lupropini, dorsal views. – **9**. *Anaedus striatus*, non-type SMNS. **10**. *A. striatulus*, non-type TMSA. **11**. *A. serraticollis*, paratype HNHM. **12**. *Sphingocorse angulicollis*, non-type SMNS. **13**. *S. maculipennis* n. sp., paratype SMNS. **14**. *Dichastops subaeneus* (holotype of *D. mashunus*) TMSA. **15**. *Luprops rufescens*, non-type TMSA. – Scales: 4 mm.



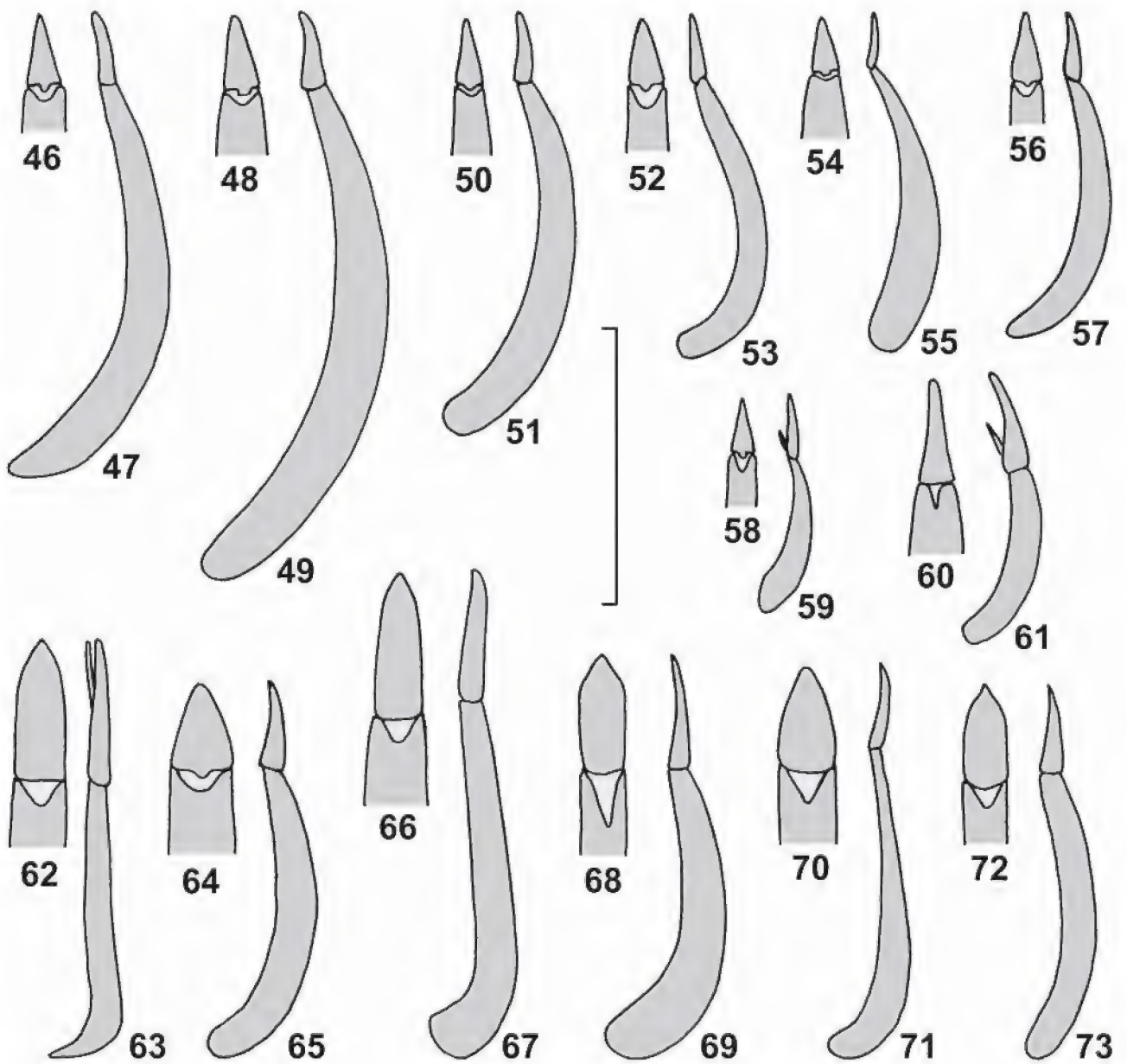
Figs. 16–21. *Luprops* spp., dorsal views. – **16**. *L. badius*, non-type SMNS. **17**. *L. bruyanti*, non-type SMNS. **18**. *L. concinnus*, non-type SMNS. **19**. *L. hereroensis*, non-type SMNS. **20**. *L. strangulatus*, non-type SMNS. **21**. *L. namaquensis*, non-type TMSA. – Scale: 4 mm.



Figs. 22–27. *Capeluprops* spp., dorsal views. – **22**. *C. amatolicus* n. sp., holotype SMNS. **23**. *C. laenoides* n. sp., holotype TMSA. **24**. *C. montanus* n. sp., holotype TMSA. **25**. *C. pondocus* n. sp., holotype TMSA. **26**. *C. silvaticus* n. sp., holotype SMNS. **27**. *C. laticollis* n. sp., holotype TMSA. – Scale: 4 mm.



Figs. 28–45. African Lupropini, aedeagi. – **28**, **29**. *Anaedus camerunus*, non-type SMNS. **30**, **31**. *A. explanatus*, non-type SMNS. **32**, **33**. *A. expansicollis*, non-type SMNS. **34**, **35**. *A. decellei*, non-type TMSA. **36**, **37**. *Dichastops subaeneus*, lectotype MNB. **38**, **39**. *Anaedus planicollis*, holotype HNHM. **40**, **41**. *A. serraticollis*, non-type SMNS. **42**, **43**. *A. leleupi*, paratype HNHM. **44**, **45**. *A. striatulus*, non-type TMSA. – Scale: 1 mm.



Figs. 46–73. African Lupropini, aedeagi. – **46**, **47**. *Capeluprops amatolicus* n. sp., holotype SMNS. **48**, **49**. *C. laenoides* n. sp., holotype TMSA. **50**, **51**. *C. silvaticus* n. sp., holotype SMNS. **52**, **53**. *C. pondocus* n. sp., holotype TMSA. **54**, **55**. *C. laticollis* n. sp., holotype TMSA. **56**, **57**. *C. montanus* n. sp., holotype TMSA. **58**, **59**. *Sphingocorse angulicollis*, non-type SMNS. **60**, **61**. *S. maculipennis* n. sp., holotype TMSA. **62**, **63**. *Luprops badius*, non-type SMNS. **64**, **65**. *L. concinnus*, non-type SMNS. **66**, **67**. *L. bruyanti*, non-type SMNS. **68**, **69**. *L. strangulatus*, non-type SMNS. **70**, **71**. *L. hereroensis*, non-type SMNS. **72**, **73**. *L. rufescens*, non-type TMSA. – Scale: 1 mm.

Capeluprops pondocus **n. sp.**
(Figs. 25, 52, 53)

H o l o t y p e (♂): South Africa, Eastern Cape, Port St. John, Ingogo Forest, sifted "humus", XII.1961, leg. N. Leleup, TMSA.

P a r a t y p e s : Same data as holotype, 16 ex. TMSA, 2 ex. BMNH. – South Africa, Eastern Cape, Port St. John, 1924, leg. R. E. Turner, 1 ex. BMNH. – South Africa, Eastern Cape (labelled as Transkei), Dwesa Forest Reserve, sifting forest litter, 27.II.1985, leg. S. Endrödy-Younga, 13 ex. TMSA, 5 ex. SMNS.

E t y m o l o g y : This species is named after Pondoland, an old British name for the area around Port St. John, where the holotype was collected.

Description: Body length 4.0–5.5 mm. Dorsal and ventral surfaces and all appendages dark ferruginous without metallic shine; punctures on dorsal side partly with microsetae, around shoulders and lateral part with some longer setae; dorsal surface between punctures shining (Fig. 25). Head with punctation similar to that on pronotum; genae somewhat swollen but not dilated, feeble transverse impression between genae, punctures with long setae; anterior margin of clypeus straight and without excavation or other modifications; eyes reniform and not distinctly excavated by epistomal canthus; maxillary palps with large securiform terminal palpomere; antenna with 11 antennomeres, shape of the antennomeres see Fig. 25, antennomere 3 slightly elongate, terminal antennomeres slightly broader but not forming a loose club. Pronotum cordiform, widest in the middle, anterior margin laterally and lateral margins completely finely bordered, posterior margin unbordered, lateral margins not crenulate, anterior corners not protruding, posterior corners rounded, surface flat with irregular punctation, punctures of same size as on head and elytra; propleura slightly uneven and with a few punctures, prosternal process not prominent. Scutellum bent downward, invisible. Hind wings absent. Elytra short oval, widest behind the middle, lateral margin not visible from above even at shoulders, shoulders prominent; surface with irregular punctation sometimes arranged in irregular rows; epipleura with a longitudinal row of fine punctures. Ventrites with extremely fine, nearly invisible punctation, punctures with microsetae, surface feebly chagreened; terminal ventrite unbordered; membranes between the last 3 ventrites visible. Legs without particular modifications, tibiae slightly clavate, without external keels, tibial spurs minute, all tarsomeres short. Aedeagus (Figs. 52, 53) with long basale and triangular apicale. No distinct external sexual dimorphism.

Diagnosis: This species is characterized by its short and broad elytra, the cordiform pronotum without protruding anterior corners, the relatively coarse dorsal punctation and the bordered lateral margins of the pronotum. *C. amatolicus* n. sp. is similar, but that species is somewhat larger in the average, the anterior corners of the pronotum are slightly protruding, and the elytra are longer and parallel (compare Figs. 22, 25).

Capeluprops silvaticus **n. sp.**
(Figs. 26, 50, 51)

Holotype (♂): South Africa, Eastern Cape, N Fort Beaufort, Fort Fordyce NR, sifted forest litter, 1000 m, 3.–5.XII.2007, leg. W. Schawaller, SMNS.

Paratypes: Same data as holotype, 6 ex. SMNS, 4 ex. TMSA. – South Africa, Eastern Cape (labelled as Cape), Amatole Isidenge Forest Station, dead *Quercus* bark, 12.XI.1987, leg. S. Endrödy-Younga, 1 ex. TMSA. – South Africa, Eastern Cape (labelled as Cape), Amatole Isidenge Forest Station, sifted *Pinus* forest litter, 18.XI.1987, leg. S. Endrödy-Younga, 1 ex. TMSA. – South Africa, Eastern Cape (labelled as Cape), Amatole Isidenge Forest Station, cattle dung, 19.XI.1987, leg. S. Endrödy-Younga, 1 ex. TMSA.

Etymology: Living in forest (Lat. Silva).

Description: Body length 4.5–5.8 mm. Dorsal and ventral surfaces and all appendages dark ferruginous without metallic shine; punctures on dorsal side without microsetae, only around shoulders with some setae; dorsal surface between punctures shining (Fig. 26). Head with punctation similar to that on pronotum; genae somewhat swollen but not dilated, no distinct transverse impression between genae, punctures with long setae; anterior margin of clypeus straight and without excavation or other modifications; eyes reniform and not distinctly excavated by epistomal canthus; maxillary palps with large securiform terminal palpomere; antenna with 11 antennomeres, shape of the antennomeres see Fig. 26, antennomere 3 slightly elongate, terminal antennomeres slightly broader but not forming a loose club. Pronotum widest in posterior third, anterior and lateral margins finely bordered, posterior margin unbordered, lateral margins not crenulate, anterior corners slightly protruding, posterior corners rounded, surface flat with irregular punctation, punctures of same size as on head and elytra; propleura slightly uneven and with a few punctures, prosternal process not prominent. Scutellum bent downward, invisible. Hind wings absent. Elytra elongate oval, widest behind the middle, lateral margin not visible from above even at shoulders, shoulders prominent; surface with irregular punctation sometimes arranged in irregular rows; epipleura with a longitudinal row of fine punctures. Ventrites with extremely fine, nearly invisible punctation, punctures with microsetae, surface feebly chagreened; terminal ventrite unbordered; membranes between the last 3 ventrites visible. Legs without particular modifications, tibiae slightly clavate, without external keels, tibial spurs minute, all tarsomeres short. Aedeagus (Figs. 50, 51) with long basale and triangular apicale. No distinct external sexual dimorphism.

Diagnosis: This species is distinguished by its short and broad elytra, the broad, subquadrate and flat pronotum, the relatively coarse dorsal punctation and the bordered lateral margins of the pronotum (Fig. 26). *C. laticollis* n. sp. has a similar broad pronotum, but in that species the lateral margin of the pronotum is unbordered, the dorsal punctation is finer, and the head has a distinct impression between the genae (Fig. 27).

Key to species of *Capeluprops* n. gen.

1 Pronotum subrectangular or subquadrate, base as wide as the anterior margin (Figs. 26, 27)..... **2**

– Pronotum cordiform, its base distinctly narrower than the anterior margin (Figs. 22–25)..... **3**
2 Lateral margins of pronotum unbordered, surface of pronotum and elytra finely punctured (Fig. 27)..... ***C. laticollis* n. sp.**
– Lateral margins of pronotum bordered, surface of pronotum and elytra coarsely punctured (Fig. 26)..... ***C. silvaticus* n. sp.**
3 Anterior corners of pronotum protruding, anterior margin excavated (Figs. 22, 23)..... **4**
– Anterior corners of pronotum not protruding, anterior margin nearly straight (Figs. 24, 25)..... **5**
4 Lateral margins of pronotum finely bordered, elytra and pronotum broader (Fig. 22). – Eastern Cape..... ***C. amatolicus* n. sp.**
– Lateral margins of pronotum marked but unbordered, elytra and pronotum longer (Fig. 23). – Western Cape..... ***C. laenoides* n. sp.**
5 Elytra and pronotum broader (Fig 25), apicale of aedeagus broadly triangular (Fig. 50). – Eastern Cape, coastal forest..... ***C. pondocus* n. sp.**
– Elytra and pronotum longer (Fig. 24), apicale of aedeagus elongate triangular (Fig. 54). – Western Cape, montane habitat..... ***C. montanus* n. sp.**

3.3 *Dichastops* Gerstaecker, 1871

Dichastops subaeneus Gerstaecker, 1871
(Figs. 14, 36, 37)

Dichastops mashunus Peringuey, 1904 **n. syn.**

Type material: "Sansibar", leg. Cooke, 1 ♂ syntype of *D. subaeneus* MNB (56635), designated herewith as lectotype. – "Sansibar", leg. Cooke, 1 syntype (now paralectotype) of *D. subaeneus* MNB (56635), sex not examined. – "Endara" (= Ndara, Tanzania), 1 ♀ syntype (now paralectotype) of *D. subaeneus* MNB (56635). – "Mashunaland", "Salisbury", without date, ♀ holotype of *D. mashunus* TMSA.

New material: Ethiopia, Gambela Prov., 30 km W Abobo, 20.VII.1984, leg. Rybalov, 1 ex. SMNS. – Tanzania, Dodoma Prov., 70 km N Dodoma, 1350 m, 17.XII.2006, leg. F. Kantner, 11 ex. SMNS. – Tanzania, Iringa Prov., 80 km NE Iringa, 650 m, 9.–10.I.2007, leg. F. Kantner, 1 ex. SMNS. – Tanzania, Morogoro Prov., 10 km N Mikumi, 700 m, 11.I.2007, leg. F. Kantner, 1 ex. SMNS. – Tanzania (labelled as Tanganyika), Kombe, Unyanyembe, 12.–14.XI.1899, leg. S. Glauning, 9 ex. MNB. – Malawi, Mzimba Distr., Vwaza Game Reserve, 1100 m, 30.–31.I.2004, leg. W. Heinz, 1 ex. SMNS. – Uganda, Entebbe, 9.IV.1998, leg. G. Wallberger, 3 ex. CRGT. – South Africa, KwaZulu-Natal, Ndumu Game Reserve, 20.–22.XI.2002, leg. W. Schawaller, 1 ex. SMNS. – South Africa, KwaZulu-Natal, Ndumu Game Reserve, 21.XI.2002, leg. J. Harrison & R. Müller, 3 ex. TMSA. – South Africa, KwaZulu-Natal, SW Magudu, 4.–5.I.2009, leg. P. Schüle, 1 ex. SMNS. – South Africa, Limpopo, Lekgalameetse NR, 800–1000 m, 27.XI.–1.XII.2008, leg. R. Müller & W. Schawaller, 6 ex. SMNS, 6 ex. TMSA. – South Africa, Mpumalanga, Booysendal Farm, 25.X.2000, leg. TMSA staff, 1 ex. TMSA. – South Africa, Mpumalanga, Helena Farm, 12.II.2002, leg. TMSA staff, 1 ex. TMSA.

Synonymy: The holotype of *D. mashunus* Peringuey, 1904 is a female, but all other characters agree with those of the types of *D. subaeneus* Gerstaecker, 1871, thus both taxa are considered as same species.

Remarks: The genus *Dichastops* Gerstaecker, 1871 is now considered to be monotypic, with *D. subaeneus* Gerstaecker, 1871 as the only species. The other species formerly included in the genus, *D. congoanus* Kolbe, 1889, is transferred herein to the genus *Luprops* Hope, 1833 (see below).

Type localities: "Sansibar" [Tanzania] (*D. subaeneus*), "Mashunaland" [Zimbabwe] (*D. mashunus*).

Distribution: Eastern Africa from Ethiopia to South Africa (new records: KwaZulu-Natal, Limpopo, Mpumalanga).

3.4 *Luprops* Hope, 1833

Luprops badius Müller, 1887
(Figs. 16, 62, 63)

New material: Ethiopia, Sidamo Prov., 40 km E Agere Maryam, 13.IV.2007, leg. K. Werner, 1 ex. SMNS. – Ethiopia, Sidamo Prov., 30–50 km SE Yabello, 18.IV.2007, leg. K. Werner, 1 ex. SMNS. – Guinea, Seredou, 5.IV.1975, leg. A. Zott, 10 ex. MNB. – Liberia, Bong Town, 24.XI.1988, leg. F.-T. Krell, 3 ex. SMNS. – Ivory Coast, Adiopodoumé, 7.V.1988, leg. F.-T. Krell, 1 ex. SMNS. – Benin, Kandi, Saa, 22.VI.2001, leg. F. & L. Kantner, 1 ex. SMNS. – Tanzania, Dodoma Prov., 70 km N Dodoma, 1350 m, 17.XII.2006, leg. F. Kantner, 7 ex. SMNS. – Mozambique, Sofala Prov., Gorongosa NP, 29.XI.2004, leg. P. Schüle, 1 ex. SMNS. – Mozambique, Manica Prov., 60 km W Chitobe, 16.XII.2005, leg. P. Schüle, 1 ex. SMNS. – NE Namibia, 20 km SE Divundu, 1000 m, 17.III.2006, leg. W. Schawaller, 1 ex. SMNS. – Botswana, Patamatenga, 31.X.2002, leg. F. Wachtel, 1 ex. CRGT. – Malawi, 5 km S Chintheche, 2.–3.III.2008, leg. U. Göllner, 1 ex. MNB. – Zimbabwe, Kyle Park at Lake Mutirikwi, 1.–5.XII.1993, leg. M. Uhlig, 2 ex. MNB. – Zimbabwe, Victoria Falls, 925 m, 19.X.2006, leg. U. Göllner, 1 ex. MNB. – Zimbabwe, Masvingo Prov., 100 km N Beit Bridge, 25.XI.2006, leg. S. Gussmann & R. Müller, 1 ex. TMSA. – Zimbabwe, Matopos NP, 28.XI.–1.XII.1993, leg. M. Uhlig, 1 ex. MNB. – Zambia, Solwesi, 3.XI.2002, leg. F. Wachtel, 6 ex. CRGT. – Zambia, 30 km NE Livingstone, 6.XI.2002, leg. F. Wachtel, 1 ex. CRGT. – Zambia, 40 km NE Livingstone, Mabula Camp, 14.XI.2002, leg. F. Wachtel, 1 ex. CRGT. – Zambia, Mumpwa, 12.XI.2002, leg. F. Wachtel, 1 ex. CRGT. – Mozambique, Pomene, 3.V.1975, leg. A. Strydom, 1 ex. TMSA. – Mozambique, Sofala Prov., Gorongosa NP, 19.XII.2005, leg. S. Gussmann & R. Müller, 2 ex. TMSA. – South Africa, KwaZulu-Natal, Mkuzi NR, 17.I.2000, leg. P. Schüle, 1 ex. SMNS. – South Africa, KwaZulu-Natal, Tembe Elefant Park, 17.–19.XI.2002, leg. J. Harrison, R. Müller & W. Schawaller, 1 ex. TMSA, 1 ex. SMNS. – South Africa, KwaZulu-Natal, Ndumu, 21.XI.2002, leg. G. Harrison & R. Müller, 1 ex. TMSA. – South Africa, KwaZulu-Natal, Lalucia, Burmanbush, 15.–16.IV.2009, leg. D. MacFadyen & R. Müller, 1 ex. TMSA. – South Africa, KwaZulu-Natal, Hluhluwe, 10.–14.XI.2001, leg. L. A Ballerio, 1 ex. TMSA. – South Africa, Limpopo, Lekgalameetse NR, 800–1000 m, 27.XI.–1.XII.2008, leg. R. Müller & W. Schawaller, 1 ex. SMNS, 1 ex. TMSA. – South Africa, Northern Cape, Grootmist, 20.XI.1948, leg. C. Koch, 1 ex. TMSA. – Namibia (labelled as SWA), Otjivarongo, Abachaus, XII.1949, leg. G. Hobohm, 6 ex. TMSA.

Type locality: "Zambesi-Gebiet".

Distribution: Widespread in tropical Africa, south to South Africa (new records: KwaZulu-Natal, Northern Cape) and Namibia (FERRER 2004).

Luprops brevicornis (Pic, 1918)

Lyprops brevicornis Pic, 1918.

Type locality: "Afrique orientale, Shirati" [Tanzania].

Remarks: Without a reexamination of the type this taxon remains doubtful like the other taxa described by PIC (1918): *L. subrufescens* Pic, 1918 (Congo), *L. senegalensis* Pic, 1918 (Senegal), *L. subaeneicollis* Pic, 1918 (Congo) and *L. diversipennis* Pic, 1918 (Ethiopia).

Distribution: Eastern Africa.

Luprops bruyanti (Pic, 1917)
(Figs. 17, 66, 67)

Lyprops bruyanti Pic, 1917.

New material: Ghana, Ashanti Region, Kumasi, Nhiasu, 330 m, 6.II.1968, leg. S. ENDRÖDY-YOUNGA, 1 ex. SMNS, 1 ex. TMSA (det. KASZAB). – Togo, Sokodé, Kpangalam, 3.VI.1988, leg. F.-T. KRELL, 1 ex. SMNS. – Liberia, Bong Town, 21.–24.II.1988, leg. F.-T. KRELL, 3 ex. SMNS (det. MERKL). – Nigeria, Nsukka, 19.VII.1988, leg. F.-T. KRELL, 1 ex. SMNS (det. MERKL). – Benin, Kandi, Saa, 22.VI.2001, leg. F. & L. KANTNER, 4 ex. SMNS.

Type locality: "Sierra Leone".

Distribution: Western Africa.

Luprops chatanayi (Pic, 1917)

Lyprops chatanayi Pic, 1917.

Remarks: According to the original description ("rapproche de *L. pilosus* Müll., mais ce dernier est plus trapu"), this taxon is probably a synonym of the following species *L. concinnus* (Fåhraeus, 1870). The type locality "Beira" coincides with the type locality of *L. mosambicus* Péringuey, 1904, considered also as synonym of *L. concinnus*.

Type locality: "Beira".

Distribution: Mozambique.

Luprops concinnus (Fåhraeus, 1870)
(Figs. 18, 64, 65)

Syggona concinna Fåhraeus, 1870.
Lyprops breviusculus Gerstaecker, 1871 **n. syn.**
Luprops pilosus Müller, 1887 **n. syn.**
Lyprops mosambicus Péringuey, 1904 **n. syn.**

Type material: "Wanga" (Tanzania), leg. V. D. DECKEN, 1 ♀ syntype of *L. breviusculus* MNB (56636), designated herewith as lectotype. – "Wanga", leg. V. D. DECKEN, 1 ♀ syntype (now paralectotype) of *L. breviusculus* MNB (56636).

New material: Tanzania (labelled as D. O. Afr.), Muansa, 4.XI.1914, leg. HOLTZ, 1 ex. MNB (det. GEBIEN). – Tanzania (labelled as D. O. Afrika), Dodoma, IV.1926, leg. BRANDES, 2 ex. MNB. – Tanzania (labelled as D. O. Afrika), Usandawi, 18.II.1930, leg. H. FLIEGNER, 1 ex. MNB. – Tanzania, Mbeya Prov., E Mbeya, Chimala, 1200 m, 6.I.2007, leg. F. KANTNER, 4 ex. SMNS. – Zambia (labelled as NW Rhodesia), Mwengwa, 6.I.1910, leg. H. C. DOLLMAN, 1 ex. SMNS. – Zimbabwe, Kyle Park at Lake Mutirikwi, 5.XII.1993, leg. M. UHLIG, 1 ex. MNB. – Zimbabwe, Kyle Park at Lake Mutirikwi, 27.XI.2006, leg. S. GUSSMANN & R. MÜLLER, 1 ex. TMSA. – Mozambique, Sofala Prov., Gorongosa NP, 29.XI.2004, leg. P. SCHÜLE, 1 ex. SMNS. – Mozambique, Sofala Prov., Gorongosa NP, 29.XI.2004, leg. S. GUSSMANN & R. MÜLLER, 2 ex. TMSA. – Botswana, 5 km E Gweta, 900 m, 21.–22.III.2006, leg. W. SCHAWALLER, 4 ex. SMNS. – NW Botswana, Tsodili Hills, 1000 m, 18.–19.III.2006, leg. W. SCHAWALLER, 1 ex. SMNS. – Botswana, Maun, Island Safari Lodge, 2.–15.I.1994, leg. M. SNIZEK, 3 ex. HNHM. – Botswana, Okavango, Thamalakane River, XII.1973, leg. P. REAVEL, 14 ex. TMSA, 3 ex. SMNS. – Botswana, Okavango, Boro River, II.1974, leg. P. REAVEL, 3 ex. TMSA. – NW Namibia (labelled as S. W. Afr.), Kaokoveld, 13 km W Ehombe, 11.II.1975, leg. S. ENDRÖDY-YOUNGA, 1 ex. TMSA. – Namibia (labelled as SWA), Damaraland, Okahandja, VIII.1956, leg. W. HOESCH, 3 ex. TMSA. – Namibia (labelled as SWA), Kleinhausen, no date, leg. W. HOESCH, 1 ex. TMSA. – NE Namibia, 120 km E Rundu, 1000 m, 15.–16.III.2006, leg. W. SCHAWALLER, 2 ex. SMNS. – NE Namibia, Tsumkwe, 1150 m, 10.–11.III.2006, leg. R. MÜLLER & W. SCHAWALLER, 1 ex. SMNS, 1 ex. TMSA. – Namibia, Windhoek, 29.I.1997, leg. G. J. SCHINDLER, 2 ex. CRGT. – Namibia, Farm Aris, 28.XII.1997, leg. G. J. SCHINDLER, 1 ex. CRGT. – Namibia (labelled as SWA), Sandfontein, without date, 1 ex. TMSA. – Namibia, 64 km NE Tsumeb, Farm Wildernis, 19.–22.III.1998, leg. H. J. BREMER, 1 ex. MNB. – N Namibia, Kavango, Popa Falls, 26.II.–3.III.1992, leg. M. UHLIG, 2 ex. MNB. – South Africa, Transvaal, Pretoria, 28.–30.XII.1977, leg. S. ENDRÖDY-YOUNGA, 12 ex. HNHM, 1 ex. TMSA (det. KASZAB). – South Africa, Transvaal, XII.1966, leg. SCHULZE, 1 ex. TMSA. – South Africa, Transvaal, Pretoria Distr., Roodeplat, 8.–10.X.1960, leg. NEUBECKER, 3 ex. TMSA. – South Africa, Transvaal, Pretoria, 22.XI.1984, leg. W. D. HAACKE, 1 ex. TMSA. – South Africa, Transvaal, Blyde River Canyon, 2.V.1981, leg. S. ENDRÖDY-YOUNGA, 2 ex. TMSA. – South Africa, Transvaal, Blouberg, 10.I.1955, leg. TMSA staff, 1 ex. TMSA. – South Africa, Gauteng, Pretoria East, 28.XI.1999, leg. B. DOMBROWSKY, 1 ex. TMSA. – South Africa, Transvaal, Verwoerdburg, 22.X.1986, leg. VAN VIEGEN, 1 ex. TMSA. – South Africa, Potchefstroom, Rietkuil Farm, 25.XII.1986, leg. VAN VIEGEN, 1 ex. TMSA. – South Africa, Mpumalanga, Helena Farm, 22.X.2000, leg. TMSA staff, 3 ex. TMSA. – South Africa, Mpumalanga, Middelburg, XII.1961, 1 ex. TMSA. – South Africa, Northern Province, N Soutpan Mts., Amatola Farm NE Vivo, 1000 m, 15.–17.XII.2003, leg. W. SCHAWALLER, 2 ex. SMNS. – South Africa, Limpopo Prov., Thabazimbi, 16.XI.2002, leg. F. WACHTEL, 1 ex. CRGT. – South Africa, Limpopo Prov., Tshulu Research Reserve, tree fogging, 385 m, 18.II.2008, leg. D. DE BAKKER, R. JOCQUÉ et al., 1 ex. SMNS. – South Africa, Limpopo Prov., Lekgalameetse NR, 800–1000 m, 27.XI.–1.XII.2008, leg. W. SCHAWALLER, 1 ex. SMNS. – South Africa, Zululand, St. Lucia, Mission Rock, 8.XII.1975, leg. S. ENDRÖDY-YOUNGA, 2 ex. TMSA, 1 ex. SMNS.

– South Africa, KwaZulu-Natal, Kosi Bay, 13.XI.2002, leg. M. Burger, J. Harrison & R. Müller, 1 ex. TMSA. – South Africa, KwaZulu-Natal, S St. Lucia, Maphelane NR, 29.I.2008, leg. P. Schüle, 1 ex. SMNS. – South Africa, Transkei, Port St. Johns, Silaka, 2.XII.1987, leg. S. Endrödy-Younga, 1 ex. TMSA. – South Africa, Transkei, Dwesa Forest, 15.XII.1979, leg. S. Endrödy-Younga, 1 ex. TMSA.

Synonymy: The type series of *Luprops concinnus* (Fåhraeus, 1870) from "Caffraria" was redescribed by Ferrer (1995), the three studied syntypes were all females. The type series of *Luprops breviusculus* (Gerstaecker, 1871) consists of two females, which agree with the specimens of the previous series. Although males are not available, I do not hesitate to consider both as conspecific. This species is quite common in the corresponding area and plenty of newly collected material is available. All these specimens are conspecific, and not only completely agree with the above listed type material but also with the descriptions of *Luprops pilosus* Müller, 1887 and *Luprops mosambicus* (Péringuey, 1904). Peringuey (1904) distinguished *L. mosambicus* from *L. pilosus* only by a less dense setation and a somewhat sparser dorsal punctation, what are here considered as infraspecific variations. Thus, *L. breviusculus* (Gerstaecker, 1871), *L. pilosus* Müller, 1887, and *L. mosambicus* (Péringuey, 1904) are considered as junior synonyms of *L. concinnus* (Fåhraeus, 1870). The fact, that in the area around all type localities only a single species of *Luprops* with characteristic longer dorsal setation occurs, is a further zoogeographical argument for the proposed synonymies.

Type localities: "Caffraria" (*L. concinnus*), "Wanga" (*L. breviusculus*), "Zambesi-Gebiet" (*L. pilosus*), "Beira" (*L. mosambicus*).

Distribution: Eastern and southern Africa (Tanzania, Zambia, Zimbabwe, Mozambique, Namibia, South Africa).

Luprops congoanus (Kolbe, 1889) **n. comb.**

Dichastops congoanus Kolbe, 1889.
?syn. *Luprops rugatulus* Fairmaire, 1894.

Type material: "Kongo", "Kimpoko", leg. R. Büttner, without date, 2 syntypes MNB (64166).

Remarks: The genus *Dichastops* is mainly distinguished from *Luprops* by its completely divided eyes (Gebien 1921). Both syntypes of *D. congoanus* have widely separated eyes; therefore this taxon is transferred herein to *Luprops* Hope, 1833. *Luprops rugatulus* Fairmaire, 1894 is probably a junior synonym, which can be cleared only after investigation of the Fairmaire types and not in this paper. For the same reasons I do not designate a lectotype from the above listed syntypes.

Type locality: "Kongo, Kimpoko".
Distribution: West Africa, Congo.

Luprops hereroensis Gebien, 1920
(Figs. 19, 70, 71)

New material: Namibia (labelled as SWA), Otjivarongo, without date, 1 ex. TMSA. – Namibia (labelled as SWA), Otjivarongo, Abachaus, XII.1949, leg. G. Hobohm, 2 ex. TMSA. – Namibia (labelled as S. W. A.), Windhoek, without date, leg. H. Kinges, 1 ex. TMSA. – Namibia (labelled as S. W. Afr.), Etosha Pan, Okaukuejo Camp, 27.XII.1974, leg. S. Endrödy-Younga, 1 ex. TMSA. – Namibia, Waterberg, 23.IX.1990, leg. P. Schüle, 1 ex. SMNS. – Namibia, Farm Haasenhof, Otjombuindja, 29.I.1996, leg. G. Wallaberger, 1 ex. CRGT. – Namibia (labelled as DSW Afrika), Okahandja (labelled as Okahandya), without date, leg. Casper, 6 ex. MNB. – Namibia, 90 km NE Windhoek, Okaparakana, Voigts Farm, 2.–3.III.2002, leg. U. Göllner, 2 ex. MNB, 1 ex. SMNS. – N Namibia, Kavango, Popa Falls, 13.III.1992, leg. F. Koch, 1 ex. MNB. – Botswana (labelled as Bechuanaland), Shikaue, XI.1950, leg. R. Strey, 4 ex. TMSA, 2 ex. SMNS. – South Africa, Limpopo (labelled as Transvaal), Warmbad, 22.IV.1980, leg. L. Vári, 4 ex. TMSA, 1 ex. SMNS. – South Africa, Limpopo Prov., Thabaphaswa, 14.XII.2003, leg. R. Müller, 1 ex. TMSA. – South Africa, Limpopo Prov., Krüger Park, Olifants Camp, 9.XII.1988, leg. T. van Viegen, 1 ex. TMSA.

Type locality: "Namibia, Okahandja".
Distribution: Namibia, Botswana, northern South Africa (new record: Limpopo).

Luprops namaquensis (Péringuey, 1904)
(Fig. 21)

Lyprops namaquensis Péringuey, 1904.

New material: "Spektakel", 12.XI.1885, no further data, 1 ♀ TMSA.

Remarks: Just a single non-type female is available for examination, which agrees with the original description. Peringuey (1904) emphasized the long and parallel elytra which are similar to those of *L. badius*, but also mentioned a long dorsal setation which is not present in *L. badius*.

Type locality: "Namaqualand".
Distribution: South Africa (Namaqualand).

Luprops rufescens (Pic, 1915)
(Figs. 15, 72, 73)

Lyprops rufescens Pic, 1915.

New material: Ghana, Ashanti Region, Abofour, Opro River, 320 m, 7.IV.1966, leg. S. Endrödy-Younga, 1 ex. TMSA (det. Kaszab).

Remarks: Doubtful taxon with poor description and diagnosis ("Voisin de *L. pilosus* Müll. et distinct, à première vue, par la coloration bicolore des antennes"). See under *L. strangulatus* Gebien, 1921.

Type locality: "Dahomey".

Distribution: Western Africa (Benin, Ghana).

Luprops strangulatus Gebien, 1921
(Figs. 20, 68, 69)

Type material: "Kamerun", leg. Conradt, without date, 1 ♂ syntype TMSA.

New material: Cameroon (labelled as Kamerun), without date, leg. Conradt, 5 ex. MNB. – Kenya, Kagamega, VIII.1933, leg. H. J. A. Turner, 2 ex. TMSA. – Kenya, Kaimosi, III.–IV.1932, leg. H. J. A. Turner, 1 ex. SMNS.

Remarks: According to Kaszab's label in the HNHM, this species is a junior synonym of *L. rufescens* Pic, 1915. It might be possible that he could check the type of Pic in the Paris Museum, but this remains to be confirmed. The aedeagi of the available non-type specimens of both taxa agree well (Figs. 68, 69, 72, 73).

Type locality: "Kamerun".

Distribution: Central Africa (Cameroon, Congo, Kenya).

Luprops subparallelus (Pic, 1917)

Lyprops subparallelus Pic, 1917.

Remarks: Very probably a junior synonym of *L. badius* Müller, 1887 ("Voisin de *L. badius* Müll., avant-corps plus foncé et elytres sans traces de stries").

Type locality: "Zanguebar" (= Zanzibar).

Distribution: Tanzania (Zanzibar).

3.5 *Sphingocorse* Gebien, 1921

Sphingocorse angulicollis Gebien, 1921
(Figs. 12, 58, 59)

Type material: "Kamerun", leg. Conradt, without date, 1 ♂ syntype NHMB, designated herewith as lectotype. – "Kamerun", leg. Conradt, without date, 1 syntype (now paralectotype) NHMB (sex not examined).

New material: Liberia, Bong Town, 24.–25.XI.1988, leg. F.-T. Krell, 8 ex. SMNS, 2 ex. TMSA. – Ivory Coast, Adiopodoumé, 8.IV.1988, leg. F.-T. Krell, 1 ex. SMNS. – Congo, Yangambi, VIII.–IX.1954, leg. H. Franz, 5 ex. NHMB. – Democratic Republic of the Congo (Congo belge), Epulu, 20.–31.XII.1948, leg. J. C. Bradley, 1 ex. TMSA.

Remarks: This species may eventually be a junior synonym of the following species, see below.

Type locality: "Kamerun".

Distribution: West and Central Africa.

Sphingocorse gabonicus (Pic, 1917)

Pseudolyprops gabonicus Pic, 1917.

New material: Ghana, Ashanti Region, Ofinso, 260 m, 18.VII.1965, leg. S. Endrödy-Younga, 1 ex. SMNS (det. Kaszab).

Remarks: The available non-type specimen, which Kaszab has identified as *S. gabonicus*, well agrees with the above listed material of *S. angulicollis*. However, without examining the type material of Pic's taxon, a synonymy of both taxa with *S. angulicollis* as a junior synonym cannot be confirmed.

Type locality: "Gabon".

Distribution: West Africa.

Sphingocorse maculipennis **n. sp.**
(Figs. 13, 60, 61)

Holotype (♂): South Africa, KwaZulu-Natal (labelled as Zululand), Mtubatuba-Dukuduku, 7.IV.1974, leg. S. Endrödy-Younga, TMSA.

Paratypes: Same data as holotype, 5 ex. TMSA, 4 ex. SMNS. – South Africa, KwaZulu-Natal, Dukuduku Forest Station, 2.IV.1974, leg. S. Endrödy-Younga, 29 ex. TMSA, 4 ex. HNHM. – South Africa, KwaZulu-Natal, Dukuduku Forest Station, 7.IV.1974, leg. S. Endrödy-Younga, 23 ex. TMSA. – South Africa, KwaZulu-Natal, Mtubatuba, 7.IV.1974, leg. S. Endrödy-Younga, 1 ex. TMSA. – South Africa, KwaZulu-Natal, Sodwana Bay, 23. XI.1992, leg. S. Endrödy-Younga, 1 ex. TMSA. – South Africa, KwaZulu-Natal, Kosi Bay, 12.XI.2002, leg. M. Burger, J. Harrison & R. Müller, 2 ex. TMSA. – South Africa, KwaZulu-Natal, Kosi Bay, 11.–17.XI.2002, leg. W. Schawaller, 12 ex. SMNS. – South Africa, KwaZulu-Natal, Maphelane, 29.I.2008, leg. R. Müller, 2 ex. TMSA. – South Africa, KwaZulu-Natal, St. Lucia, 7.–8.II.2004, leg. P. Hlaváč, 1 ex. SMNS. – South Africa, KwaZulu-Natal, St. Lucia, 25.VII.1997, leg. H. Meybohm, 6 ex. MNB.

Etymology: The name refers to the characteristic spotted elytra.

Description: Body length 3.5–4.6 mm. Dorsal and ventral surfaces and all appendages dark ferruginous without metallic shine, elytra with an indistinct lighter spot in the posterior third reaching the lateral margin and with an additional spot at the tip interrupted by the suture; basal parts of tibiae, basal and terminal antennomeres somewhat lighter; dorsal and ventral surfaces roughly punctured, punctures with long erect setae, surface between punctures shining (Fig. 13). Head with punctation slightly smaller than on pronotum; genae somewhat swollen but not dilated, distinct transverse impression between genae; clypeus without punctation and shining, anterior margin of clypeus straight and without excavation or other

modifications; eyes reniform and not distinctly excavated by epistomal canthus; maxillary palps with large securiform terminal palpomere; antenna with 11 antennomeres, shape of the antennomeres see Fig. 13, antennomere 3 not elongate, terminal 3 antennomeres not forming a club. Pronotum widest in anterior third, anterior and posterior margins unbordered, lateral margins unbordered but distinctly crenulate, anterior corner rounded, posterior corners acute, surface convex with irregular rough and deep punctation, punctures slightly larger than on head and elytra; propleura with similar punctation and setation as on pronotum, prosternal process short, bent downward; metaventrite posteriorly with a median round impression, punctures on metaventrite laterally larger than medially. Scutellum visible, shining, without punctation. Hind wings present. Elytra widest behind the middle, lateral margin distinctly dentate in humeral region, margin completely visible from above; surface with irregular rough but not confluent punctation not arranged in rows or striae; epipleura with punctation and setation similar as on elytral disc. Ventrites with punctures laterally larger than medially, terminal ventrite unbordered, intersegmental membranes exposed between ventrites 3–5. Legs without particular modifications, tibiae without external keels, tibial spurs short, all tarsomeres short. Aedeagus (Figs. 60, 61) without particular characters, apicale long finger-like and with rounded tip. No distinct external sexual dimorphism.

D i a g n o s i s : This species is distinguished from from *S. angulicollis* Gebien, 1921 by its differently shaped pronotum with distinctly crenulated lateral margins (compare Figs. 12, 13), by the different shape of the aedeagus with a long finger-like apicale with rounded tip (apicale shorter, triangular with acute tip in *S. angulicollis*) (Figs. 58, 59, 60, 61), and by bicoloured elytra with lighter spots (unicoloured brown in *S. angulicollis*).

Sphingocorse sp.

N e w m a t e r i a l : W Kenya, Kagamega Forest NR, Buyango Hill (view point), 1670 m, I.2004, leg. F. Haas, J. Holstein & A. Zahm, 2 ♀♀ SMNS.

R e m a r k s : Both females cannot be identified to species level. The external characters are similar to those of available females of *S. angulicollis*, but might also be identical to those of *S. gabonicus* (see remarks above).

4 References

Ardoin, P. (1969): Contribution à la connaissance de la faune entomologique de la Côte-d'Ivoire (J. Decelle, 1961–1964). XXXVII. Coleoptera Tenebrionidae. – Annales du Musée royal de l'Afrique Centrale (Zoologie) **175**: 139–285, pls. I–XI.

Ardoin, P. (1973): Deux nouvelles espèces africaines de Coléoptères Tenebrionidae appartenant au Musée Royal de l'Afrique Centrale, Tervuren. – Revue de Zoologie et de Botanique africaines **87**: 126–130.

Ardoin, P. (1976): Mission entomologique du Musée Royal de l'Afrique Central aux Monts Uluguru, Tanzanie (L. Berger, N. Leleup et J. Debecker, V–VIII.1971), 20. Coleoptera Tenebrionidae. – Revue de Zoologie africaine **90**: 723–768, pls. VII–X.

Ferrer, J. (1995): New and forgotten species of Tenebrionidae collected by J. A. Wahlberg (1810–1856) preserved in the Swedish Museum of Natural History, Stockholm (Coleoptera, Tenebrionidae). – Entomologisk Tidskrift **116**: 59–64.

Ferrer, J. (2004): Tenebrionidae (Coleoptera) de Namibia, avec descriptions de 12 espèces nouvelles. – Mitteilungen aus dem Museum für Naturkunde Berlin (Zoologische Reihe) **80**: 181–250.

Gebien, H. (1913): Coleoptera, Tenebrionidae. – Wissenschaftliche Ergebnisse der Deutschen Zentral-Afrika-Expedition 1907–1908 unter Führung Adolf Friederichs, Herzogs zu Mecklenburg **4**: 57–79 [published 1913 and not 1911 as noted in the world catalogue of Gebien].

Gebien, H. (1921): Die Tenebrioniden Westafrikas. – Archiv für Naturgeschichte **86** (A, 6) (1920): 1–256.

Kaszab, Z. (1969): The scientific results of the Hungarian Soil Zoological Expedition to the Brazzaville-Congo. 37. Coleoptera: Tenebrionidae. – Annales historico-naturales Musei nationalis hungarici **61**: 225–265 [title in English, text in German].

Peringuey, L. (1904): Sixth Contribution to the South African Coleopterous Fauna. Description of new species of Coleoptera in the collection of the South African Museum. – Annals of the South African Museum **3**: 167–299.

Pic, M. (1918): Hétéromères exotiques nouveaux. – L'Échange, Revue Linnéenne **34** (387): 1–4 (hors texte).

Schawaller, W. (2005): The species of the African genus *Mimocellus* Wasmann (Coleoptera: Tenebrionidae), with descriptions of three new species. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **687**: 9 pp.

Schawaller, W. (2007a): Redescription of the monotypic genus *Terametus* Motschulsky, 1869 from South Africa and establishment of its taxonomic position (Coleoptera: Tenebrionidae: Lagriinae: Lupropini). – African Entomology **15**: 369–372.

Schawaller, W. (2007b): *Antennoluprops bremeri*, gen. nov., spec. nov. from Madagascar, with remarkable male antennal and tibial morphology. – Spixiana **30**: 29–32.

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The genus *Derosphaerus* Thomson (Coleoptera: Tenebrionidae: Cnodalonini) in Borneo, with description of a new species[1]

Wolfgang Schawaller

Abstract

Distributional data, photos of the beetles and drawings of the aedeagi (except *D. coerulescens*) are given for all nine species of the tenebrionid genus *Derosphaerus* Thomson, 1858 (subfamily Stenochiinae Kirby, 1837, tribe Cnodalonini Gistel, 1856) from Borneo. A new species (*D. emasicus* **n. sp.**) is described, which is unique in the genus because of the humped elytra and the mucronate female elytral apex. *D. metallescens* Fairmaire, 1893 is considered a new junior synonym of *D. viriditinctus* (Fairmaire, 1882). *Derosphaerus ericmatthewsi* **n. nom.** for *D. matthewsi* Schawaller, 2005 (not *D. matthewsi* Kaszab, 1987) is proposed. A key to the species is added.

K e y w o r d s : Coleoptera, Tenebrionidae, *Derosphaerus*, Borneo, taxonomy, new species, elytral mucro, distribution.

Zusammenfassung

Alle neun Arten der Tenebrioniden-Gattung *Derosphaerus* Thomson, 1858 (Unterfamilie Stenochiinae Kirby, 1837, Tribus Cnodalonini Gistel, 1856) aus Borneo werden anhand von Funddaten, Fotografien der Käfer und Zeichnungen der Aedaeagi (außer *D. coerulescens*) zusammenfassend dargestellt. Eine neue Art (*D. emasicus* **n. sp.**) wird beschrieben, deren gebuckelte Elytren und Mukro-ähnliche Elytrenspitze der Weibchen einmalig sind innerhalb der Gattung. *D. metallescens* Fairmaire, 1893 wird als neues jüngeres Synonym von *D. viriditinctus* (Fairmaire, 1882) angesehen. *Derosphaerus ericmatthewsi* **n. nom.** für *D. matthewsi* Schawaller, 2005 (nicht *D. matthewsi* Kaszab, 1987) wird vorgeschlagen. Ein Bestimmungsschlüssel der behandelten Arten ist angefügt.

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1 Introduction

The tenebrionid genus *Derosphaerus* Thomson, 1858 (subfamily Stenochiinae Kirby, 1837, tribe Cnodalonini Gistel, 1856) contains about 100 species occurring in the southeastern Palaearctic (in a wider sense including China) and the Oriental, Australian-Papuan and Africa-Madagascar regions. Kaszab (1987) revised the Australian-Papuan species giving also a preliminary diagnosis of the genus, and Schawaller (2007) summarized the few Himalayan species. The numerous congeners of the other regions have never been revised, therefore species identifications are problematic and the distributional range of most species is widely unknown. Moreover, newly collected species with peculiar characters might modify the generic limits (Schawaller 2005). The aedeagi of the congeners differ not only in shape (compare Figs. 10–17), but also strongly vary in the relation of the aedeagal length/body length (between 13.5 % and 38 %, see Tab. 1).

Tab. 1. *Derosphaerus* spp. from Borneo, aedeagus length, body length, and relation aedeagus length/body length of selected specimens.

Species	Aedeagus length (mm)	Body length (mm)	Aedeagus length/ body length (percent)
D. aeruginosus	2.4	13.0	18.5
D. coerulescens	–	15.0	–
D. emasicus n. sp.	3.4	12.5	27.2
D. ericmatthewsi	3.5	12.0	29.2
D. fuscatus	2.3	17.0	13.5
D. hauschildi	1.8	11.0	16.4
D. morio	3.6	18.0	20.0
D. vicinus	4.5	11.8	38.0
D. viriditinctus	1.9	12.5	15.4

Gebien (1914) presented a preliminary list and an identification key to the Bornean species of *Derosphaerus* un-

[1] Contributions to Tenebrionidae, no. 89. – For no. 88 see: Stuttgarter Beiträge zur Naturkunde A, Neue Serie 4 (2011).

der the name *Encyalesthus* Motschulsky, 1860, which is a junior synonym of *Derosphaerus* (Kaszab 1987). In the context of the description of a new species with an "unusual" elytral mucro in the females (Fig. 1), I take the chance and present newly collected material of all species from Borneo. Photographs of all Bornean species are added to facilitate subsequent identifications. Altogether, nine species of *Derosphaerus* are currently known from Borneo. An additional species with doubtful origin remains unnamed. A few records from Sumatra, Seram, Java, and the Philippines are also included.

Acronyms of depositories

BMNH	The Natural History Museum, London
CCZG	Collection Dr. Carsten Zorn, Gnoien
CRGT	Collection Dr. Roland Grimm, Tübingen
HNHM	Hungarian Natural History Museum, Budapest
MHNG	Muséum d'Histoire Naturelle, Genève
NHMB	Naturhistorisches Museum, Basel
SMNS	Staatliches Museum für Naturkunde, Stuttgart
ZSM	Zoologische Staatssammlung, München

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2 The species

Derosphaerus aeruginosus (Fabricius, 1787) (Figs. 2, 12)

Helops aeruginosus Fabricius, 1787.
Encyalesthus aeneus Pic, 1929 syn.

Studied material: Sumatra, Dolok Merangir, 1972–1991, leg. D. Erber & W. Diehl, 6 ex. SMNS. – Sumatra, Padang Panjang, 700–1000 m, 21.–25.I.1995, leg. C. Zorn, 2 ex. CCZG. – Borneo, without further data, 1 ex. SMNS. – Borneo, Sarawak, Pamai near Kuching, 5.VIII.1993, without collector, 1 ex. CRGT. – Borneo, Sabah, Mt. Kinabalu, 28.V.1999, leg. Z. Smrž, 1 ex. SMNS. – Borneo, Sabah, Tambunan, 16.–19.I.2010, leg. R. Grimm, 4 ex. CRGT. – Borneo, Sabah, Tenom, 300 m, 24.–25.I.2010, leg. R. Grimm, 3 ex. CRGT. – Borneo, Sabah, S Tenom, Kuala Tomani, 25.I.2010, leg. R. Grimm, 2 ex. CRGT. – Borneo, Sabah, Kudat, Bak Bak, 25.III.2007, leg. R. Grimm, 4 ex. CRGT. – Borneo, Sabah, Danum Valley, 75 km SW Lahad Datu, 200–600 m, leg. M. Hiermeier, 1 ex. CRGT. – Borneo, Kalimantan, Apokayan, Long Ampung, 700 m, 10.–25.II.1997, leg. C. & P. Zorn, 1 ex. SMNS.

Distribution: Southeastern Asia (Nepal, NE India, Laos, W Malaysia), Borneo (type locality), Sumatra, Java.

Derosphaerus coerulescens (Guérin-Méneville, 1830) (Fig. 4)

Helops coerulescens Guérin-Méneville, 1830.
Encyalesthus transversicollis Fairmaire, 1893 syn.
Encyalesthus coelestinus Fairmaire, 1896 syn.
Encyalesthus ceramensis Gebien, 1920 syn.
Encyalesthus robustus Pic, 1923 syn.

Studied material: Ceram [= Seram], without further data, 1 ♀ SMNS.

Remarks: *Encyalesthus transversicollis* Fairmaire, 1893, described from Borneo, was synonymized by Ardoin (1969) based on the examination of the types. New material from Borneo, which is identical with the above listed female from Seram, is unknown to me. However, because of zoogeographical reasons, it might be possible that *D. transversicollis* (Fairmaire, 1893) is a valid species and not a synonym of *D. coerulescens* (Guérin-Méneville, 1830). Unfortunately, the type of *D. transversicollis* was not available for comparison.

Distribution: Buru (type locality), Seram, Borneo (?).

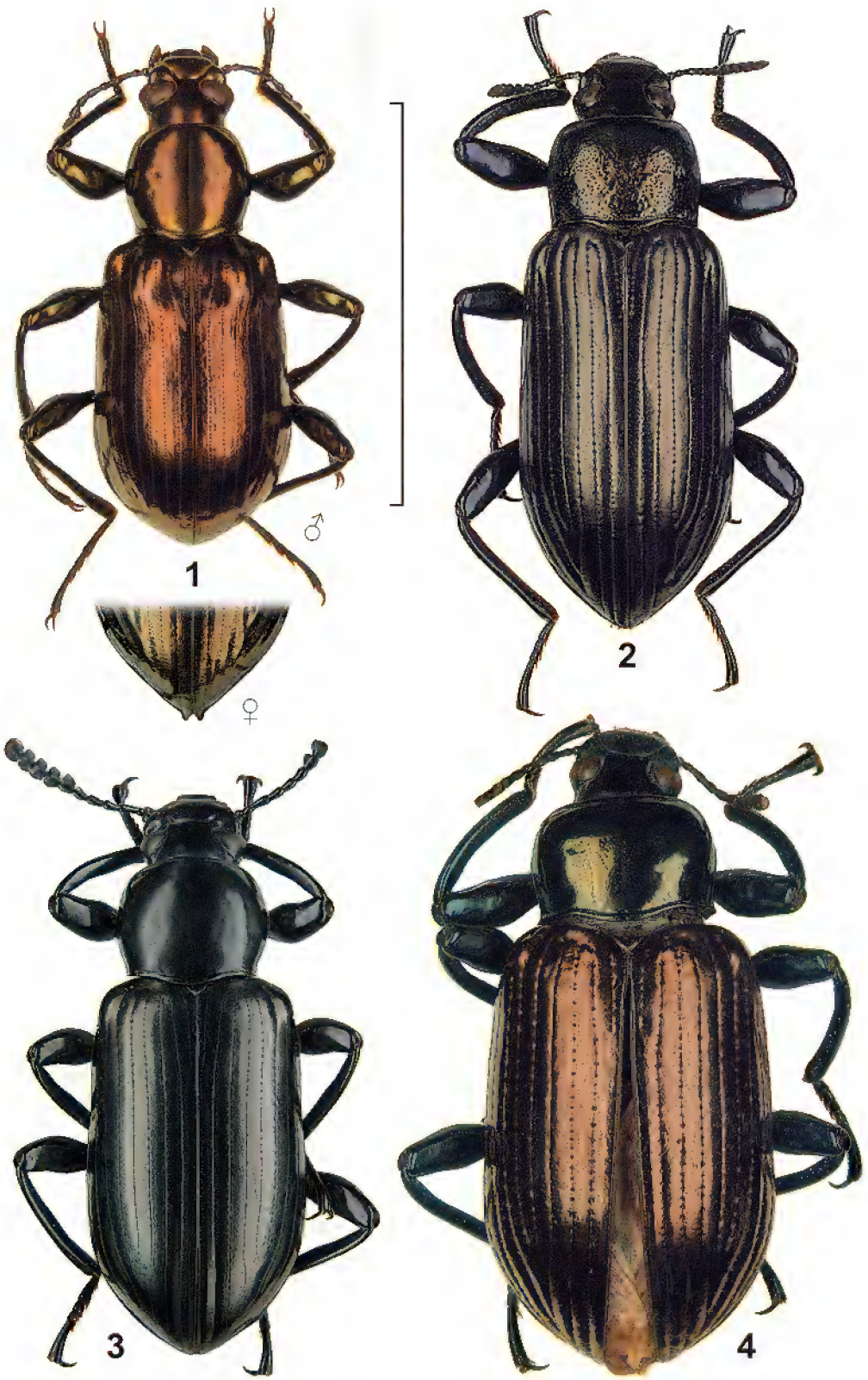
Derosphaerus emasicus **n. sp.** (Figs. 1, 16)

Holotype (♂): Borneo, Sabah, Crocker Range NP, Gunung Emas, 1600 m, 6.–18.VI.1996, leg. J. Kodada & F. Ciampor, SMNS.

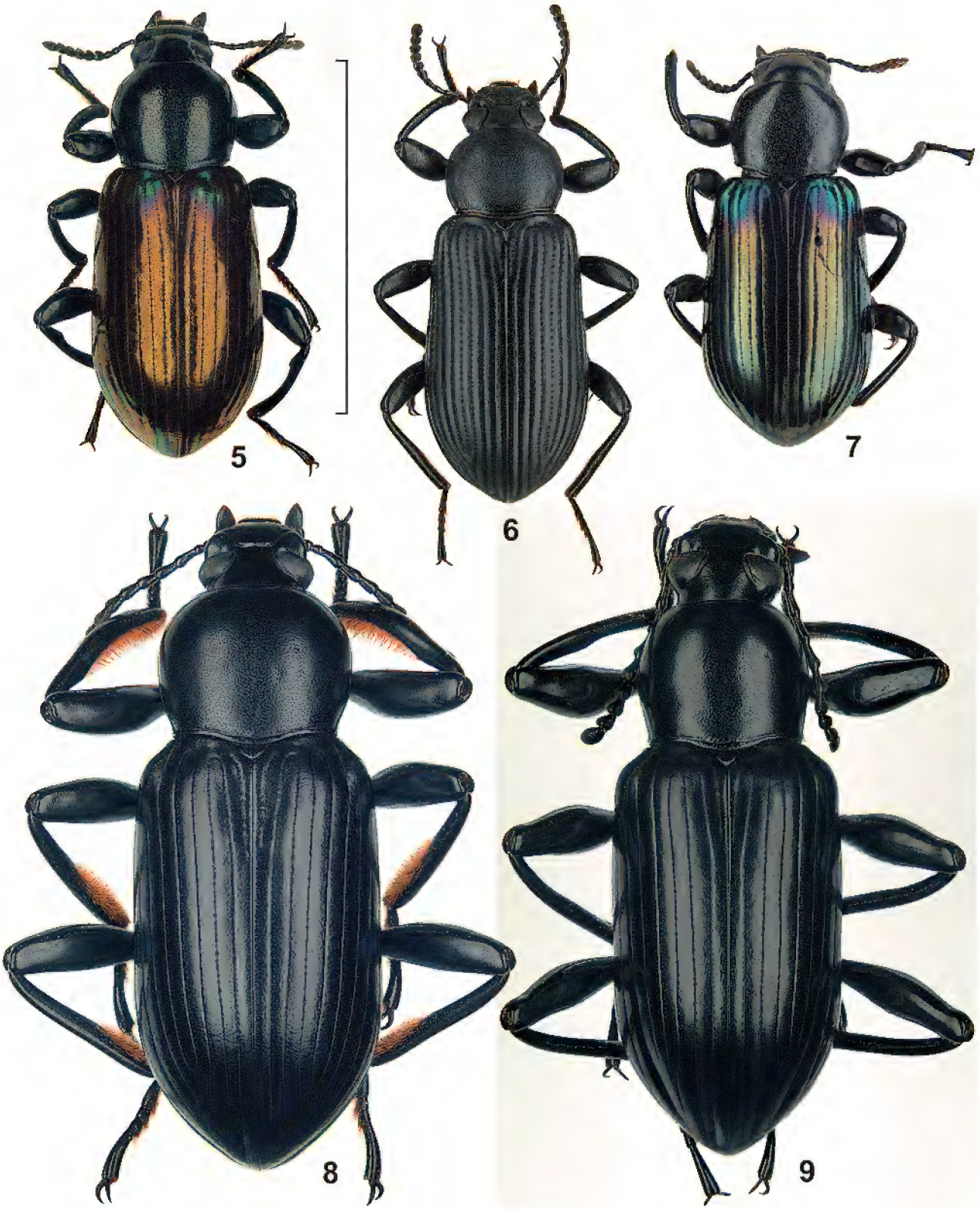
Paratypes: Borneo, Sabah, Sapulut, 23.VI.1998, leg. J. Kodada & F. Ciampor, 1 ♂ SMNS. – Borneo, Sabah, Kinabalu NP, Headquarters, 1300–1600 m, 23.VIII.1998, leg. D. Bartsch & C. Häuser, 1 ♂ SMNS. – Borneo, Sabah, Kinabalu NP, Headquarters, 1560 m, 3.–13.VIII.1988, leg. A. Smetana, 1 ex. MHNG. – Borneo, Sabah, Crocker Range NP, Gunung Emas, 15.–27.IV.1993, leg. I. Jeniš & M. Strba, 1 ex. ZSM. – Borneo, Sabah, Crocker Range NP, Gunung Emas, 500–1900 m, 6.–21.V.1995, leg. I. Jeniš, 6 ex. ZSM, 2 ♀♀ SMNS, 2 ex. BMNH, 1 ex. HNHM. – Borneo, Sabah, Crocker Range, road Kota Kinabalu to Tambunan, Gunung Emas, 1650 m, 22.III.–6.IV.2000, leg. L. Bolm, 1 ex. NHMB. – Borneo, Sabah, Kinabalu NP, Headquarters, 1600 m, 8.–10.VII.1992, leg. E. Heiss, 1 ex. CRGT. – Borneo, Sabah, Kinabalu NP, Headquarters, 1550 m, 22.–25.V.2005, leg. R. Grimm, 2 ex. CRGT. – Borneo, Sabah, Kinabalu NP, Headquarters, 1550 m, 28.XI.2006, leg. R. Grimm, 2 ex. CRGT. – Borneo, Sabah, Kinabalu NP, Headquarters, 1550 m, 27.III.2007, leg. R. Grimm, 5 ex. CRGT. – Borneo, Sabah, Kinabalu NP, Headquarters, 1550 m, 7.–9.I.2010, leg. R. Grimm, 1 ex. CRGT.

Etymology: The new species is named after Gunung (= Mount) Emas in the Crocker Range, where the holotype has been collected.

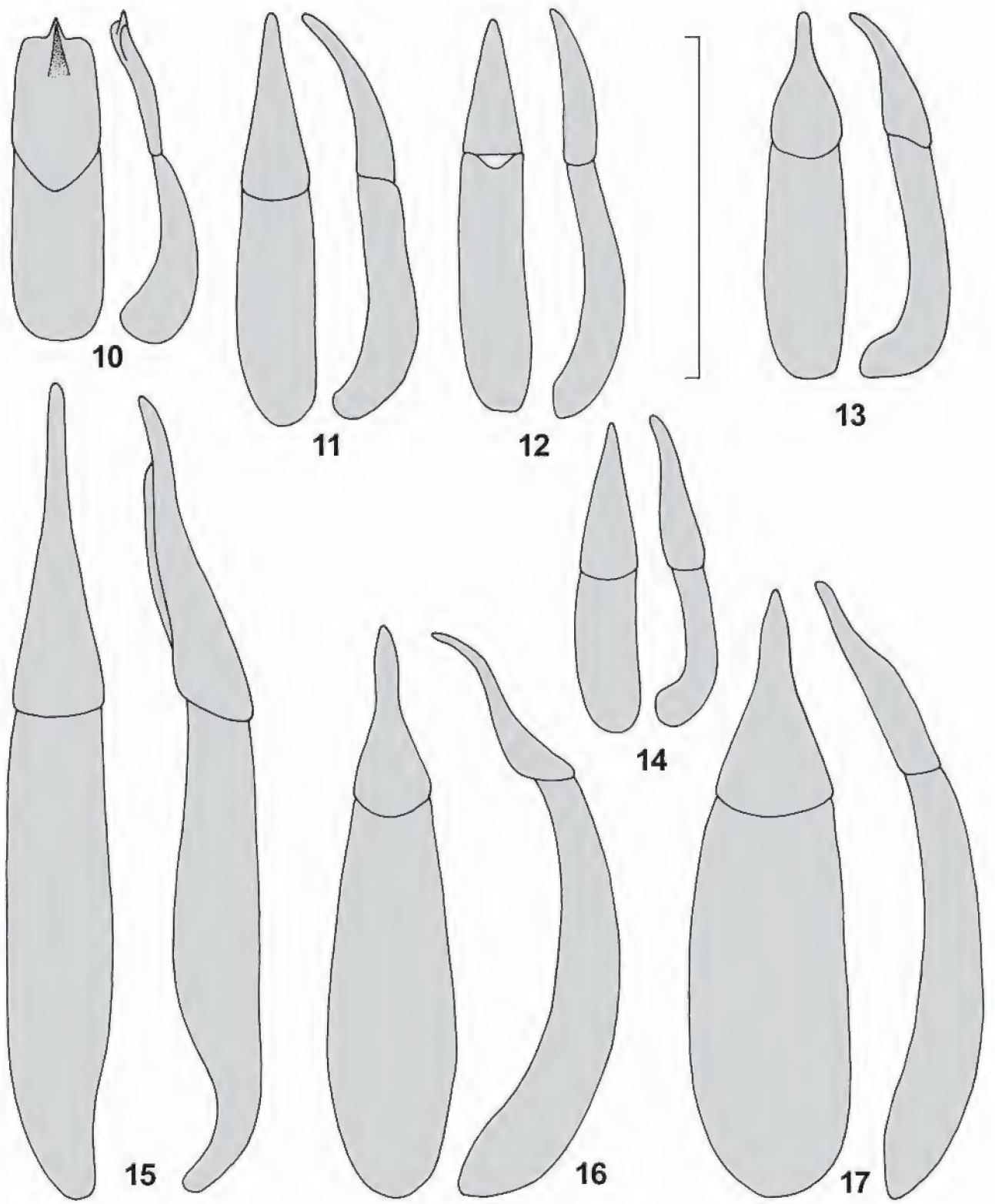
Description: Body length 12.0–13.0 mm. Body elongate, subparallel-sided; surface, including legs and antennae, uniformly shining olive-bronze metallic, without setation. Head with fine and equal punctation; genae not widened, fronto-clypeal suture deep; eyes not divided, distance between eyes on frons in both sexes as wide as length of eyes, frons without impressions or other



Figs. 1–4. *Derosphaerus* spp. from Borneo, dorsal views. – **1**. *D. emasicus* n. sp., ♂ holotype and ♀ elytral mucro. **2**. *D. aeruginosus*. **3**. *D.* sp. **4**. *D. coerulescens*. – Scale: 10 mm.



Figs. 5–9. *Derosphaerus* spp. from Borneo, dorsal views. – **5**. *D. viriditinctus*. **6**. *D. vicinus*. **7**. *D. hauschildi*. ♂ lectotype. **8**. *D. fuscatus*. **9**. *D. morio*. – Scale: 10 mm.



Figs. 10–17. *Derosphaerus* spp. from Borneo, aedeagi, dorsal (left) and lateral (right) views. – **10**. *D. viriditinctus*. **11**. *D. fuscatus*. **12**. *D. aeruginosus*. **13**. *D.* sp. **14**. *D. hauschildi*. **15**. *D. vicinus*. **16**. *D. emasicus* n. sp. **17**. *D. morio*. – Scale: 2 mm.

modifications; supraorbital furrow deep; shape of antennomeres see Fig. 1, last antennomeres broader but not forming a distinctly separated club. Pronotum convex, about as broad as long, widest in the middle; lateral margins very fine and broadly interrupted in the middle; anterior corners not protruding, posterior corners not prominent; basal margin with broad border; dorsal surface with punctation as on head; propleura smooth without punctation; prosternal apophysis not prominent. Elytra longitudinal, sides somewhat widened posteriorly, basal part slightly humped in both sexes, tip of elytra mucronate, i. e. with small prolongation in females (Fig. 1); surface with nine rows of punctures without distinct striae and with an additional scutellar row; punctures of rows distinctly larger than those on pronotum, without setae; elytral intervals flat and with similar fine punctation as on pronotum; epipleura complete, continuously narrowing to tip, anterior to tip with impression. Hind wings completely developed; metaventrite medially with longitudinal furrow, surface smooth. Abdominal ventrites with shining, wrinkled surface and distinct punctation, with exposed intersegmental membranes; last ventrite not bordered and without groove in both sexes, and with distinct pale and adpressed setation in males. Legs long and with smooth surface, femora clavate, tibiae long and narrow and without longitudinal keels, shape of all tibiae similar in both sexes, in males middle tibia somewhat broadened apically; inner side of apices of all tibiae fringed with dense setation in males; tibial spurs short and not striking; anterior tarsomeres 1–4 not widened in males, tarsomere 5 of anterior tarsus somewhat longer than tarsomeres 1–4 combined, tarsomere 5 of posterior tarsus distinctly shorter than tarsomeres 1–3 combined, tarsomere 1 of posterior tarsus prolonged. Aedeagus (Fig. 16) extremely long in relation to body size (Tab. 1).

Diagnosis: *Derosphaerus emasicus* n. sp. can be recognized by the uniform, shining olive-bronze metallic surface also on legs and antennae, the round and convex pronotum with very fine punctation and widely interrupted lateral margin, the slightly humped elytra in the basal part, sexually dimorphic elytra with distinct mucro in the females, unmodified tibiae and denser inner setation of the tibiae in the males, sexually dimorphic last ventrite with dense setation in males, and the shape of the aedeagus. The humped elytra and the mucronate elytral apex of the females are unique in the genus, and also the striking metallic surface is characteristic (compare Fig. 1 and Figs. 2–9).

Derosphaerus ericmatthewsi **n. nom.**
(Schawaller 2005: figs. 1–6, 21)

Derosphaerus matthewsi Schawaller, 2005 (not *D. matthewsi* Kaszab, 1987).

Studied material: Borneo, Sabah, 1 ex. ZSM.

Homonymy: This species needs a new name, because it is not conspecific with *Derosphaerus matthewsi* Kaszab, 1987 from Australia. Unfortunately, the latter was overlooked when describing *D. matthewsi* Schawaller, 2005 from Sumatra.

Remarks: In 2008, the above listed specimen was identified by the present author, unfortunately without registering all collecting data. According to M. Balke (pers. comm.), this specimen cannot be found again in ZSM, so it is currently not possible to complete the label data.

Distribution: Sumatra (type locality), Borneo.

Derosphaerus fuscatus (Fairmaire, 1893)
(Figs. 8, 11)

Encyalesthus fuscatus Fairmaire, 1893.
Derosphaerus impunctatus Pic, 1923 syn.

Studied material: Borneo, Sabah, Kampung Takala, Kinabatangan River, 5.VI.1998, leg. J. Kodada & F. Ciampor, 6 ex. SMNS. – Borneo, Sabah, Gum Gum, Lower Kinabatagan, VI.2005, leg. H. Takano & T. Owen Edmunds, 2 ex. BMNH. – Borneo, Sabah, Kinabalu NP, Poring, 380 m, 9.–11.III.2007, leg. R. Grimm, 1 ex. CRGT.

Remarks: *D. fuscatus* and *D. morio* are similar in appearance, however, the sexually dimorphic tibiae, the depth of the fronto-clypeal sutures, the punctation of the elytral intervals, and the shape and relative length of the aedeagi are different (compare Figs. 11 and 17).

Distribution: Sumatra (type locality), Borneo.

Derosphaerus hauschildi (Gebien, 1914)
(Figs. 7, 14)

Encyalesthus hauschildi Gebien, 1914.

Studied material: Borneo [Sabah], Kinabalu, 1 ♂ syntype NHMB (collection Frey), designated herewith as lectotype. – Borneo [Sabah], Kinabalu, 2 ♀♀ syntypes (now paralectotypes) NHMB (collection Frey). – Borneo, Sarawak, Belaga, Long Linau, 17.–21.III.1990, leg. A. Riedel, 1 ♀ SMNS.

Remarks: Similar as *D. viriditinctus* (Fairmaire, 1882), but somewhat smaller, with different aedeagus (compare Figs. 10 and 14), and without modified posterior tibia in males.

Distribution: Borneo (type locality).

Derosphaerus morio (Gebien, 1914)
(Figs. 9, 17)

Encyalesthus morio Gebien, 1914.

Studied material: Borneo, Sabah, 20 km S Tenom, 600 m, 19.III.2007, leg. W. Schawaller, 1 ex. SMNS. – Borneo, Sabah, near Keningau, fogging from *Melanolepis* sp., 18.II.2001, leg. A. Floren, 2 ex. CRGT.

Distribution: Borneo (type locality), W Malaysia.

Derosphaerus vicinus Pic, 1923
(Figs. 6, 15)

Studied material: Java, without further data, 1 ex. NHMB (collection Frey) (det. Ardoin, compared with type). – Borneo, Sabah, Kudat, 16.–17.V.2005, leg. R. Grimm, 2 ex. CRGT. – Borneo, Sabah, Kudat, 14.–16.II.2006, leg. R. Grimm, 3 ex. CRGT, 2 ex. SMNS. – Borneo, Sabah, Kudat, 25.–26.III.2007, leg. R. Grimm, 1 ex. CRGT. – Borneo, Sabah, Kota Belud, 50 m, 24.III.2007, leg. R. Grimm, 1 ex. CRGT.

Remarks: The new material from Borneo shows no differences to the above mentioned specimen from Java, which was compared with Pic's type by Ardoin. However, it might be possible, that *D. vicinus* Pic, 1923 is a junior synonym of the widespread *D. rotundicollis* (Laporte, 1840) (type locality Manille = Manila), and that also *D. interstitialis* Fairmaire, 1883 (type locality Saleyer Island) belongs to the *D. rotundicollis* species-group. *D. alutaceus* Fairmaire, 1882 (type locality Sumatra) is also similar in outer appearance, but the pronotum has no lateral border (with distinct border in *D. vicinus*).

Distribution: Java (type locality), Borneo.

Derosphaerus viriditinctus (Fairmaire, 1882)
(Figs. 5, 10)

Encyalesthus viriditinctus Fairmaire, 1882.
Encyalesthus metallescens Fairmaire, 1893 **n. syn.**

Studied material: Sumatra, 1 paratype of *E. metallescens* NHMB (collection Frey). – Sumatra, Bengkhulu, 20 km S Muko Muko, 16.VIII.1991, leg. D. Erber, 2 ex. SMNS. – Borneo, Sabah, Sandakan, leg. Baker, 1 ex. NHMB (collection Frey) (*E. metallescens* det. Gebien). – Borneo, Sarawak, Gunung Penrissen, 1000 m, 23.V.1994, leg. I. Löbl & D. Burckhardt, 1 ♀ MHNG. – Borneo, Sarawak, Kuching, Reservoir Park, 8.IV.2009, leg. R. Grimm, 1 ex. CRGT. – Borneo, Sabah, Tenom, 300 m, 24.–25.I.2010, leg. R. Grimm, 1 ex. CRGT. – Borneo, Sabah, Crocker Range, road Kota Kinabalu to Tambunan, Gunung Emas, 1650 m, 22.III.–6.IV.2000, leg. L. Bolm, 1 ex. NHMB, 1 ex. SMNS. – Borneo, Sabah, Kinabalu NP, Poring, 500 m, 23.–24.XI.1996, leg. W. Schawaller, 2 ex. SMNS. – Borneo, Sabah, Crocker Range, Apin Apin, 27 km NE Keningau, 700–800 m, 21.–22.III.2000, leg. M. Hiermeier, 4 ex. CRGT, 1 ex. SMNS. – Borneo, Sabah, 24 km NE Keningau, Apin Apin, 500 m, 18.II.2006, leg. R. Grimm, 1 ex. CRGT. – Borneo, Sabah, Tambunan, 16.–19.I.2010, leg. R. Grimm, 1 ex. CRGT. – Borneo, Sabah, Crocker Range, Gunung Alab, VI.2007, leg. Chew, 1 ex. CRGT. – E Bali, N Semarapura, SW Besakih, Menanga, 500 m, 12.XII.2007, leg. R. Grimm, 1 ex. CRGT. – Philippines, Palawan, Port Barton, 150 m, 14.–18.XII.1990, leg. L. Bolm, 1 ex. SMNS.

Remarks: I could not find true differences between specimens deposited under *Derosphaerus viriditinctus* (Fairmaire, 1882) or *D. metallescens* (Fairmaire, 1893) in various collections, and also the original descriptions do not provide convincing differences. Although I could not reexamine types of both taxa, I consider the latter as junior synonym. *D. viriditinctus* is characterized by the unusual shape of the aedeagus (Fig. 10) and by the male posterior tibia dilated in the mediobasal part (Fig. 5). *D. metallescens* is missing in the species list of the genus (Kaszab 1987), neither cited as valid species nor as synonym. *D. brevicornis* (Mäklin, 1863) from Indochina is similar in appearance, but the aedeagus is completely different and the male posterior tibia is not dilated.

Distribution: Sumatra (type localities of *D. viriditinctus* and *D. metallescens*), Borneo, Bali, W Malaysia, Thailand, Palawan.

Derosphaerus sp.
(Figs. 3, 13)

Studied material: Borneo, Sabah, Mt. Kinabalu, 600 m, 26.IV.1993, leg. P. Hoffmann, 1 ex. CRGT.

Remarks: The studied single male, blackish without metallic lustre, represents an additional species, which cannot be identified. The specimen was said to be collected at Mt. Kinabalu, but this species was not found by other skilled tenebrionid collectors in that region and even in other Bornean localities. Thus, this specimen might be mislabelled and is perhaps not from Borneo. It also differs from other Oriental species known to me. Because of the uncertain origin the single male is figured herein to facilitate subsequent identification, but is not described as a new species.

3 Key to the Bornean species of *Derosphaerus*

1 Dorsal surface dull or shining black, without metallic lustre.. **2**
– Entire surface or at least elytra with metallic lustre. **4**
2 Body length 10–12 mm; dorsal surface dull; elytra with punctural rows in shallow striae (Figs. 6, 15)..... ***D. vicinus***
– Body length 17–20 mm; dorsal surface shining; elytra with distinct striae without punctures. **3**
3 Clypeal suture deep; all male tibiae with dense setation apically at inner side; aedeagus small with regular triangular apicale (Figs. 8, 11). ..... ***D. fuscatus***
– Clypeal suture weak; male tibiae without dense setation; aedeagus large with laterally excavate apicale (Figs. 9, 17). .. .. ***D. morio***
4 Eyes large, with their major part on dorsal side of head, nearly touching each other on frons; male anterior tibiae sinuated at the inner side. ..... ***D. ericmatthewsi***
– Eyes of normal size, situated on lateral part of head, interocular space wide; male anterior tibiae without modifications. ... **5**
5 Entire dorsal surface with metallic lustre..... **6**
– Only elytra with metallic lustre, head and pronotum black without metallic lustre. **8**
6 Pronotum with rough, partly confluent punctation, surface somewhat wrinkled (Figs. 2, 12)..... ***D. aeruginosus***
– Pronotum with extremely fine, separated punctation, surface smooth. **7**
7 Body length 12–13 mm; pronotum rounded, convex; interocular space smaller than eye diameter; elytra humped anteriorly, female elytra with mucronate apex; legs long (Figs. 1, 16). ..... ***D. emasicus* n. sp.**
– Body length about 15 mm; pronotum subquadrate, flat, interocular space wider than eye diameter; elytra unmodified; legs of normal length (Fig. 4). ..... ***D. coerulescens***

8 Male posterior tibiae dilated in the mediobasal part; aedeagus with plate-like apicale (Figs. 5, 10)..... ***D. viriditinctus***
– Male posterior tibiae without modification; aedeagus with regular triangular apicale (Figs. 7, 14). ..... ***D. hauschildi***

4 References

Ardoin, P. (1969): Note synonymique (Col. Tenebrionidae). – Bulletin de la Société entomologique de France **74**: 124–127.

Gebien, H. (1914): Die Tenebrionidenfauna Borneos. Erster Teil. – Sarawak Museum Journal (2) **5**: 1–58.

Kaszab, Z. (1987): Die papuanisch-australischen Arten der Gattung *Derosphaerus* Thomson, 1858 (Coleoptera: Tenebrionidae). – Acta zoologica Academiae scientiarum hungaricae **33**: 41–85.

Schawaller, W. (2005): Three new tenebrionids (Coleoptera: Tenebrionidae) from Sumatra – New species or new genera? – Annales zoologici **55**: 565–569.

Schawaller, W. (2007): The genus *Derosphaerus* Thomson in the Nepal Himalayas (Coleoptera: Tenebrionidae). – Entomologica basiliensia **29**: 171–175.

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New species of the genus *Anomala* Samouelle from mainland South East Asia and South China (Coleoptera: Scarabaeidae: Rutelinae)

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Abstract

Twelve new species of the genus *Anomala* Samouelle, 1819 (Coleoptera: Scarabaeidae: Rutelinae) are described and illustrated: *A. mausonica* **n. sp.**, *A. atriventris* **n. sp.**, *A. rubida* **n. sp.**, *A. pacholatkoi* **n. sp.**, *A. langbianensis* **n. sp.**, *A. cognata* **n. sp.**, *A. ahrensi* **n. sp.** from Vietnam, *A. oehleri* **n. sp.** from Laos, *A. limbourgi* **n. sp.** from Cambodia, *A. porrecta* **n. sp.**, *A. monogramma* **n. sp.**, and *A. keithi* **n. sp.** from South China. *Mimela kuatuna* Machatschke, 1955 is transferred to the genus *Anomala* (**n. comb.**).

Key words: Systematics, Rutelinae, new species, new combination, Vietnam, Cambodia, Laos, China.

Zusammenfassung

Zwölf neue Arten der Gattung *Anomala* Samouelle, 1819 (Coleoptera: Scarabaeidae: Rutelinae) werden beschrieben und abgebildet: *A. mausonica* **n. sp.**, *A. atriventris* **n. sp.**, *A. rubida* **n. sp.**, *A. pacholatkoi* **n. sp.**, *A. langbianensis* **n. sp.**, *A. cognata* **n. sp.**, *A. ahrensi* **n. sp.** aus Vietnam, *A. oehleri* **n. sp.** aus Laos, *A. limbourgi* **n. sp.** aus Kambodscha, *A. porrecta* **n. sp.**, *A. monogramma* **n. sp.** und *A. keithi* **n. sp.** aus Südchina. *Mimela kuatuna* Machatschke, 1955 wird in die Gattung *Anomala* gestellt (**n. comb.**).

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1 Introduction

Approximately 270 species of the almost globally distributed genus *Anomala* (see Samouelle 1819) were described from China and mainland South East Asia so far. A systematic review of the Rutelinae of Indochina was published by Paulian (1959). In the course of the examination of unidentified Asian *Anomala* material of various institutional and private insect collections (see below) several new species from South East Asia and China could be identified. In this paper, twelve of them are described.

Although it is desirable to present new species in the framework of revisions of greater entities like genera, species groups, or a geographical unit, such approach is sometimes opposed by ordinary obstacles like loan expirations in connection with limited time for scientific work. Therefore, the descriptions here appear not in a greater context.

Acknowledgements

I am greatly indebted to Johannes Frisch, Joachim Willers and Berndt Jaeger (all MNHB), Patrick Grootaert and Pol Limbourg (both IRSNB), and Matthias Nuss and Olaf Jäger (both SMTD) for supporting my studies of material in their collections. I also thank Dirk Ahrens (Bonn), Denis Keith (Chartres), Alexander Napolov (Riga), Petr Pacholátko (Brno), Andreas Reichenbach (Leipzig), Jan Strnad (Prague), and Kaoru Wada (Tokyo) who generously loaned numerous Anomalini from their personal collections for my study.

In addition, I studied material collected by A. Napolov in 1997 and in 1998 during baseline biological surveys in protected areas of North Vietnam carried out as a joint venture between the Society for Environmental Exploration (London) and the Institute for Ecology and Biological Resources (Hanoi) through the SEE-Vietnam Forest research Project.

I express my cordial thanks to Aleš Bezděk (České Budějovice) who provided some 'hard to get' literature, and to Paul Lago (Oxford, Mississippi) for correcting the English and improving the manuscript with many helpful comments.

2 Methods

Characters and specimens were examined using a dissecting stereo microscope (ZEISS) and fiber optic illumination. The terminology is described in detail by Zorn (2006). Habitus images were modified with stacking and graphics software (CombineZP, Adobe Photoshop CS3).

Type specimens of the species described in this paper bear the following labels: "Holo-/Paratypus *Anomala* [species epithet] sp. nov. det. Zorn [year]". Different labels are separated by "|". Labels are cited in their original spelling, except for the

following adaptations according to the general format requirements of the journal: names of persons (except authors of species) in small capitals, scientific names of genera and species in italics, dates with the months always in Roman numbers.

Acronyms of depositories

ANPC	Collection Alexander Napolov, Riga
ARPC	Collection Andreas Reichenbach, Leipzig
CZPC	Collection Carsten Zorn, Gnoien
IRSNB	Institut royal des Sciences naturelles de Belgique, Brussels
JSPC	Collection Jan Strnad, Prague
KWPC	Collection Kaoru Wada, Tokyo
MNHB	Museum für Naturkunde der Humboldt Universität, Berlin
NMPC	National Museum, Prague [Národni muzeum v Praze]
SMTD	Staatliches Museum für Tierkunde, Dresden
TICB	Tammin Insect Collection, Brno

3 Descriptions of new species

Anomala mausonica **n. sp.**
(Figs. 1, 15)

Holotype ♂: "Tonkin, Montes Mauson, April, Mai, 2–3000', H. Fruhstorfer" (MNHB).

Etymology

The new species is named after the type locality Mt. Mau Son (Vietnam).

Description

Body shape. Elongate ovoid; sides of elytra subparallel. Length 15.5 mm. Width 8.6 mm.

Color. Entirely orange brown with rather strong iridescent shine (color might be more red in living or fresh specimens); legs light brown; metasternum, metacoxae and abdominal sternites dark castaneous.

Head. Clypeus trapezoidal, corners strongly rounded; with anterior margin reflexed; very densely and partly confluently punctate; frons punctate like the clypeus, with a shallow impression; vertex sparsely punctate; ratio interocular width/width of head ca. 0.62; antennal club longer than segments 2–7 combined.

Pronotum. Sides slightly sinuate before posterior angles, subparallel in the middle, strongly convergent in the anterior third; anterior angles acute and strongly produced; posterior angles obtuse; middle line slightly sulcate; basal marginal line almost complete, somewhat indistinct anterior to scutellum; punctation very dense on disc, becoming partly coalescent laterally; with distinct micropunctation.

Elytra. Regularly striate; intervals convex; strial punctures distinct, sometimes longitudinally coalescing; secondary row of punctures in subsutural interstice anteriorly doubled, that of the second and third interstice sometimes with longer distances between punctures; elytral surface with additional sparse micropunctation; hind margin evenly rounded.

Pygidium. Tumid; with strongly transverse, partly coalescing punctures.

Abdominal sternites. Sides not carinate.

Metasternum. Laterally with dense, ocellated punctation and moderately long suberect setae.

Legs. Slender; metatibia weakly fusiform; lateral tooth of protibia acute; protarsomere 5 thickened; modified pro- and mesotarsal claw apically bifid, the former with a small tooth ventrally.

Aedeagus. See Fig. 15.

Differential diagnosis

The external appearance and the shape of the aedeagus of the new species are very similar to those of *A. longicarcarata* Lin, 2002, but the apices of the parameres are more asymmetrical and more strongly hooked inward in the new species. The apex of the ventral plate is strongly bent and lacking the large hook found in *A. longicarcarata*. The iridescent sheen of the elytra is more distinct in the holotype of *A. mausonica* than in all specimens of *A. longicarcarata* examined. Moreover, both species are probably related to *A. spatuliformis* Lin, 2002 (see Lin 2002) which, besides an overall similarity, exhibits similar aedeagal structure with typical asymmetric extensions of the parameres and a strong hook of the ventral plate.

Distribution

The new species is known only from the type locality Mt. Mau Son in northeastern Vietnam.

Anomala atriventris **n. sp.**
(Figs. 2, 16)

Holotype ♂: "N Viet Nam (Tonkin), pr. Hoang Lien Son, SA PA, 11.–15.V.1990, P. Pacholátko leg. | AV 70" (TICB, later NMPC).

Etymology

The epithet refers to the predominantly black ventral surface of this species.

Description

Body shape. Elongate ovoid. Length 14.8 mm. Width 8.4 mm.

Color. Dorsal surface including propygidium, pygidium and sides of abdominal sternites orange brown (color might be more red in living or fresh specimens); antennal club dark brown; ventral surface and legs black; central parts of meso- and metafemora and metasternum dark castaneous.

Head. Clypeus subrectangular, corners strongly rounded; anterior margin moderately reflexed; clypeus and frons very densely punctate, partly rugose; vertex with sparser and finer punctation; ratio interocular width/width of head ca. 0.62; antennal club longer than segments 2–7 combined.

Pronotum. Sides slightly sinuate before posterior angles, strongly and almost evenly convergent towards acute and very strongly produced anterior angles; posterior angles square; anterior and posterior angles slightly rounded; middle line slightly sulcate; basal marginal line almost complete, somewhat indistinct anterior to scutellum; punctation fine, shallow, moderately dense; micropunctation very sparse and shallow.

Elytra. With regular, shallow stria; intervals nearly flat; strial punctures distinct; subsutural interstice with two partly irregular secondary striae that unite towards the apex; secondary stria of the second interstice entire, that of the third interstice somewhat irregular; elytral surface with additional sparse and very shallow micropunctation; hind margin evenly rounded.

Pygidium. Tumid; with shallow, transverse, partly coalescing punctures.

Abdominal sternites. Sides not carinate; nearly glabrous.

Metasternum. Laterally with dense, shallow punctation and moderately long, suberect setae.

Legs. Middle and hind legs very slender; metatibia very weakly fusiform; lateral tooth of protibia acute; protarsomere 5 thickened; modified pro- and mesotarsal claw apically bifid, the former with a small tooth ventrally.

Aedeagus. See Fig. 16.

Differential diagnosis

Anomala atriventris is very distinctive in its coloration: orange brown (probably more red in fresh specimens) dorsally, predominantly black ventrally. In contrast to all similar species (striate elytra, slender legs, tumid pygidium), the elytral striae are very inconspicuous, the surface appearing to be smooth. The aedeagus is almost symmetrical, and the parameres are conspicuously compressed.

Distribution

Anomala atriventris is only known from the type locality Sa Pa in North Vietnam.

Anomala oehleri **n. sp.**
(Figs. 3, 17)

Holotype ♂: "Laos-NE, Hua Phan prov., Ban Saluei, Phu Phan Mt., 20°15'N 104°02'E, 1500–2000 m, 26.IV.–11.V.2001, J. Bezděk & D. Hauck leg." (CZPC).

Paratypes: 4♂♂, 2♀♀, same data as holotype (CZPC). – 8♂♂, same data as holotype, but J. Bezděk leg. (ARPC, CZPC, MNHB).

Etymology

The new species is named after my mentor, the neurobiologist Prof. Dr. Jochen Oehler (Dresden).

Description

Holotype ♂. Body shape. Elongate ovoid; strongly convex. Length 16.0 mm. Width 9.1 mm.

Color. Pronotum, elytra and femora testaceous with weak metallic green shine; elytra slightly lighter and somewhat iridescent; head, pygidium and remaining part of the ventral surface including tibiae and tarsi dark castaneous with metallic green shine; clypeus and distal margins of abdominal sternites with purplish reflections.

Head. Clypeus trapezoidal with broadly rounded front angles, moderately reflexed; frons and clypeus densely and rugosely punctate; vertex with fine and sparse punctation; ratio interocular distance/width of head: 0.59; antennal club slightly longer than segments 2–7 combined.

Pronotum. Sides weakly convergent in the posterior half, more strongly convergent before the acute and produced anterior angles; posterior angles obtuse, rounded; basal marginal line broadly interrupted medially; surface with dense, fine punctation and additional, hardly visible micropunctation.

Elytra. Regularly striate with weakly convex intervals; subsutural interstice with two irregular secondary striae that coalesce before the apex; second and third interstice with a secondary stria, the latter somewhat irregular; fourth interstice with some additional punctures in the posterior third; elytral surface with distinct, sparse micropunctation.

Pygidium. Strongly tumid; with striolation which is arranged concentrically around the apex.

Abdominal sternites. Sides of sternites 1–3 carinate.

Metasternum. Laterally with very dense, ocellated punctation and long suberect setae; lateral margins strongly carinate.

Legs. Slender; metatibia weakly fusiform; lateral tooth of protibia acute; modified pro- and mesotarsal claw apically bifid, the former slightly enlarged ventrally.

Aedeagus. See Fig. 17.

♀♀. Length of antennal club and funicle subequal. Pygidium weakly tumid. Bifid protarsal claw more slender.

Variability

Body length 15.8–17.1 mm. Body width 8.8–9.4 mm. The faint metallic hue of the dorsal surface varies between greenish and pinkish.

Differential diagnosis

The strongly asymmetrical aedeagus with the deeply incised, thus two branched left paramere characteristic of *A. oehleri* is also present in *A. machatschkei* Frey,

1972, *A. triancistris* Lin, 1999 (see Lin 1999), *A. rubida* n. sp., *A. monogramma* n. sp., *A. porrecta* n. sp., *A. pacholatkoi* n. sp., *A. limbourgi* n. sp., and *A. punctulicollis* sensu Paulian (1959) (the latter is probably not the same species as the female type on which the description of *A. punctulicollis* was based by Fairmaire 1893). Although this derived character might represent a synapomorphy of the mentioned species, it is possible that this basic structure developed independently more than once. However, *A. oehleri* is probably a very close relative of *A. machatschkei* and *A. triancistris*. These extremely similar species are easily separated from *A. oehleri* by the shape of the aedeagus. In dorsal view, the apex of the right paramere projects medially (Fig. 17b), whereas it projects laterally in *A. triancistris* and posteriorly in *A. machatschkei*.

Distribution

Anomala oehleri is only known from the type locality Mt. Phu Phan in northern Laos.

Anomala rubida **n. sp.**
(Figs. 4, 18)

Holotype ♂: "N Viet Nam (Tonkin), pr. Hoang Lien Son, SA PA, 11.–15.V.1990, P. Pacholátko leg. | Coll. P. Pacholátko Invt. No." (TICB, later NMPC).

Paratypes: 6 ♂♂, 7 ♀♀, same data as holotype (CZPC, TICB). – 1 ♂, same data as holotype, but additional label "AV 74" (TICB). – 1 ♂, "Vietnam N (Sa Pa), Lao Cai Province, 250 km from Hanoi bearing 310°, Sa Pa vill. env., Hoang Lien Son Nat. Res., 30.V.–10.VI.1998, h = 1250 m, leg. A. Napolov | *Anomala* sp., det. O. Kabakov, 2001" (ANPC). – 1 ♀, same data as before, but without identification label of Kabokov (ANPC). 1 ♀, same data as before, but "27.–31.V.1998 | ♀" (ANPC).

Etymology

The Latin adjective "rubidus" stands for "deep red" and refers to the red dorsum of this species.

Description

Holotype ♂. Body shape. Elongate ovoid. Length 14.0 mm. Width 8.0 mm.

Color. Pronotum, elytra and pygidium red; remaining part of the body including the distal margin of the pygidium dark brown to black.

Head. Clypeus rectangular with rounded front angles; very densely, somewhat rugosely punctate; punctuation of frons similar to that of the clypeus, with shallow impression; vertex finely and moderately densely punctate; ratio interocular distance/width of head: 0.61; antennal club distinctly longer than segments 2–7 combined.

Pronotum. Sides slightly convergent in the posterior two-thirds, strongly convergent in the anterior third; anterior angles acute and produced; posterior angles obtuse; basal marginal line interrupted in the middle; punctation shallow, fine and moderately dense.

Elytra. Regularly striate; intervals convex; subsutural interstice with a secondary stria which becomes irregular in the anterior third, therefore subsutural interstice forming two secondary costae posteriorly; second and third interstice with weakly developed secondary stria; hind margin regularly rounded; whole elytral surface with distinct, sparse micropunctation.

Pygidium. Tumid; punctures coalescing to a fine transverse reticulation which is arranged concentrically around the apex; apex with scattered long setae.

Abdominal sternites. Sides not carinate.

Metasternum. Laterally with dense, ocellated punctation and long suberect setae; lateral margins carinate.

Legs. Slender; metatibia weakly fusiform; lateral tooth of protibia acute; modified pro- and mesotarsal claw apically bifid; the lower branch of the former very broad and apically somewhat truncated.

Aedeagus. See Fig. 18.

♀♀. Body somewhat broader than in males (see below). Antennal club slightly longer than antennomeres 2–7 combined. Sides of pronotum parallel in the posterior half. Pygidium not tumid. Bifid protarsal claw more slender.

Variability

♂♂: Body length 12.8–14.6 mm, body width 7.2–7.7 mm. ♀♀: Body length 13.9–15.2 mm, body width 7.5–8.5 mm. Secondary stria of subsutural interstice sometimes irregular; secondary stria of third interstice can be reduced to a few scattered punctures. Shape of the parameres without notable variation.

Differential diagnosis

Anomala rubida belongs to the Chinese and South East Asian group of *Anomala* species with a very asymmetric aedeagus with a strongly bifid left paramere. Assigned to this group are *A. machatschkei* Frey, 1972, *A. triancistris* Lin, 1999, *A. rubida* n. sp., *A. monogramma* n. sp., *A. porrecta* n. sp., *A. pacholatkoi* n. sp., *A. limbourgi* n. sp., and *A. punctulicollis* sensu Paulian (1959) (see diagnosis of *A. oehleri*). Because of the similarity of the genitalia and the weakly sulcate elytra, *A. rubida* probably is most closely related to *A. oehleri*, *A. triancistris*, and *A. machatschkei* from which it is separated by the typical coloration (red dorsum and a black venter), smaller body size, and unique shape of the parameres.

Distribution

Anomala rubida is only known from the type locality Sa Pa in North Vietnam.

Anomala monogramma **n. sp.**
(Figs. 5, 19)

Holotype ♂: "S China, NE Guangxi Baogai Mt., 1376 m, VI.2009, N 25°31.594' E 110°57.263', lgt. R. Sehnal & M. Háckel" (CZPC).

Paratypes: 1♂, 3♀♀, same data as holotype (CZPC, MNHB). – 1♂ "Museum Paris, Kouy-Tchéou, P. Cavalerie 1910" (MNHB).

Etymology

The epithet of the new species refers to the M-shaped marking of the pronotum.

Description

Holotype ♂. Body shape. Elongate ovoid; sides of elytra subparallel. Length 15.4 mm. Width 8.5 mm.

Color. Entirely light brown with weak metallic shine; pronotum somewhat paler; hind part of clypeus, frons, vertex, hind margin of scutellum, elytral suture, hind margin of pygidium including a small transverse patch connected with the latter on each side, metatibia, distal parts of meso- und metatarsomeres and abdominal sternites black, partly with metallic green shine; pronotum with a M-shaped marking consisting of a broad diagonal black patch on each side and two narrow black longitudinal lines framing the middle furrow.

Head. Clypeus short, subrectangular, corners rounded; anterior margin strongly reflexed; clypeus with dense, moderately fine, partly confluent punctures; frons somewhat flattened with the same punctation as the clypeus; vertex more sparsely and finely punctate; ratio interocular distance/width of head: 0.59; antennal club almost as long as funicle and scape combined.

Pronotum. Sides evenly rounded towards the acute and produced anterior angles; posterior angles obtuse, slightly rounded; midline weakly sulcate; basal marginal line interrupted anterior to scutellum; punctation moderately fine, dense, rarely coalescing.

Elytra. Intervals weakly convex; subsutural interstice with irregular punctation forming a regular row in the posterior half; secondary rows of punctures in the second and third interstice developed, forming interrupted striae; hind margin regularly rounded.

Pygidium. Tumid; punctures coalescing to fine transverse reticulation which is arranged concentrically around tumidity; long erect setae present along hind margin.

Abdominal sternites. Sides of abdominal sternites 1–4 strongly carinate.

Metasternum. Laterally with dense, ocellated punctation and suberect setae.

Legs. Slender; meso- and metatibia weakly fusiform; lateral tooth of protibia distinct, acute; modified pro- and mesotarsal claw apically bifid; modified protarsal claw widened on the ventral margin, but without obtuse angle or tooth.

Aedeagus. See Fig. 19.

♀♀. Antennal club slightly longer than antennomeres 2–7 combined. Sides of pronotum parallel in the posterior two-thirds. Pygidium moderately tumid. Terminal tooth of protibia tongue-shaped. Bifid protarsal claw more slender.

Variability

Body length 13.0–15.0 mm. Body width 6.9–8.4 mm. The dark marks of the pronotum vary slightly in size and shape, whereas frons and vertex are constantly black. The specimen from "Kouy-Tchéou" [Guizhou] appears to be somewhat aberrant since it is distinctly smaller and darker than the other specimens and almost lacking the pronotal marks. However, the shape of the aedeagus, which shows almost no variability among all male specimens examined, does not differ from the other specimens.

Differential diagnosis

When exhibiting the typical color pattern (only missing in one paratype), *A. monogramma* is easily separated from all other Chinese and South East Asian species by the M-shaped mark of the pronotum combined with regularly striate elytra. Moreover, the new species is remarkable for the strongly reflexed clypeus which is slightly or moderately reflexed in all similar species and by the modified protarsal claw in males which is lacking a tooth or angle. The very asymmetrical aedeagus with a deeply incised left paramere is characteristic.

Remarks

In addition to the type material, several more specimens from South China with questionable locality data were examined, but not included in the type series.

Distribution

Anomala monogramma is known from the Chinese province Guizhou and northeastern Guanxi.

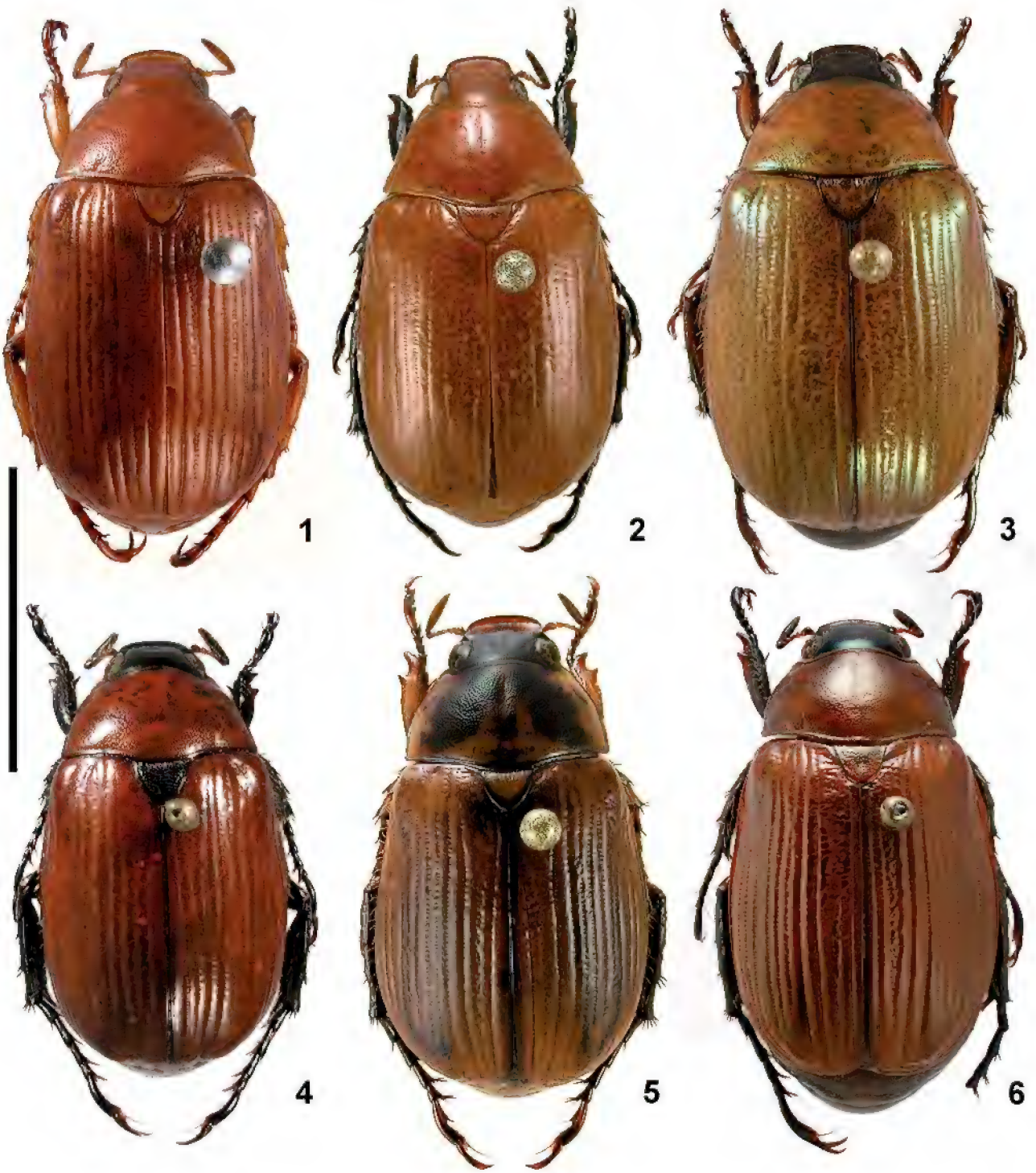
Anomala porrecta **n. sp.**
(Figs. 6, 20)

Holotype ♂: "Hongkong China" (MNHB).

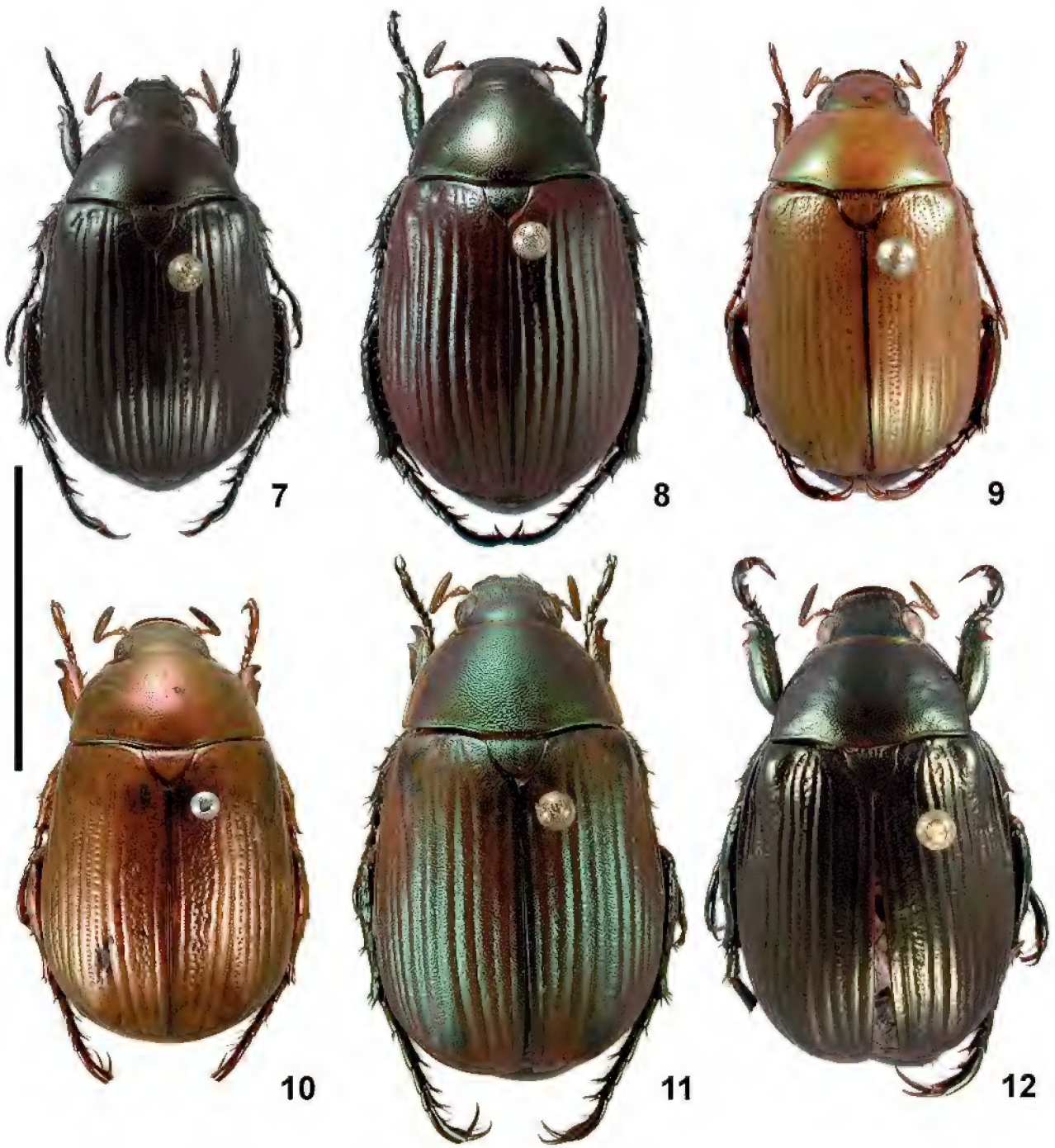
Paratypes: 2♂♂, same data as holotype (CZPC, MNHB). – 1♀, same data as holotype and separate label "♀" (MNHB). – 1♂, "China Canton, Lehmann S." (MNHB). – 2♂♂, same data as before, and "| ♂ | 87866" (CZPC, MNHB). – 1♀, same data as before, and "| ♀ | 87866" (MNHB). – 1♀, "China | ♀" (MNHB).

Etymology

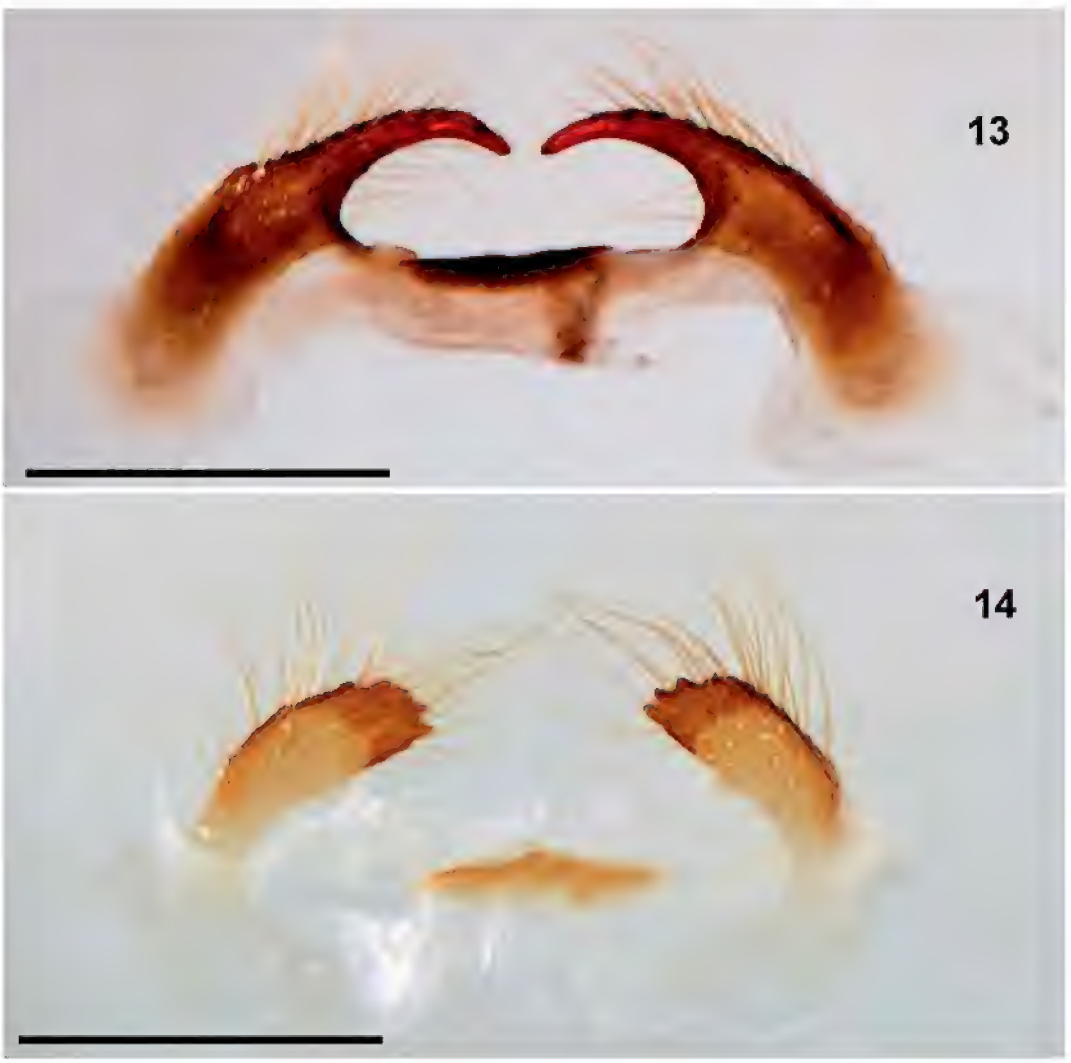
The epithet refers to the extensions of the parameres (porrectio, Latin = extension).



Figs. 1–6. *Anomala* spp. – **1**. *A. mausonica* n. sp., holotype. **2**. *A. atriventris* n. sp., holotype. **3**. *A. oehleri* n. sp., holotype. **4**. *A. rubida* n. sp., holotype. **5**. *A. monogramma* n. sp., holotype. **6**. *A. porrecta* n. sp., paratype (Guangdong). – Scale: 10 mm.



Figs. 7–12. *Anomala* spp. – **7**. *A. pacholatkoi* n. sp., holotype. **8**. *A. limbourgi* n. sp., holotype. **9**. *A. langbianensis* n. sp., paratype (Lang Bian). **10**. *A. cognata* n. sp., holotype. **11**. *A. ahrensi* n. sp., holotype. **12**. *A. keithi* n. sp., holotype. – Scale: 10 mm.



Figs. 13–14. *Anomala* spp., vaginal palps. – **13**. *A. langbianensis* n. sp., paratype (Lang Bian). **14**. *A. cognata* n. sp., paratype (Dalat). – Scales: 1 mm.

Description

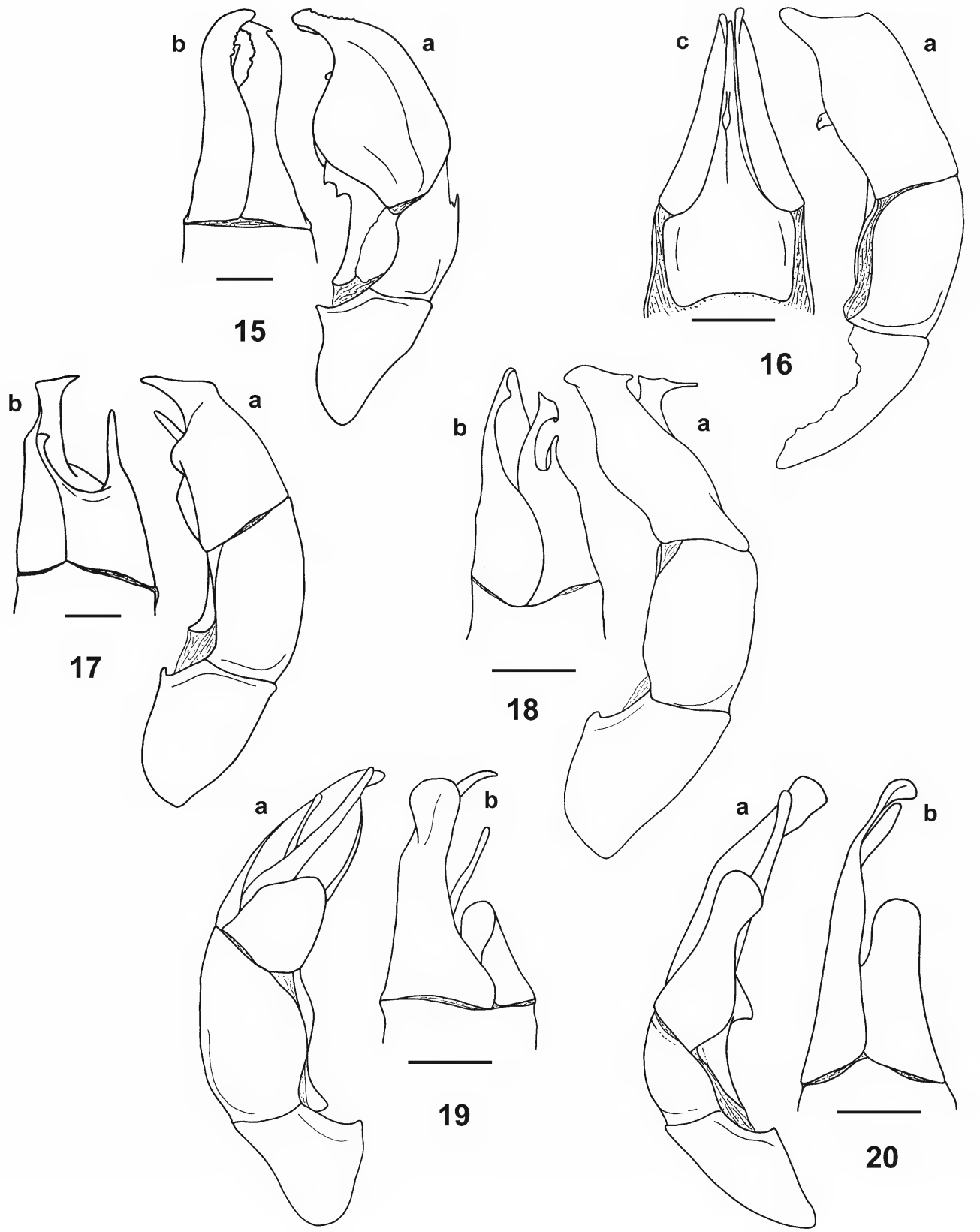
Holotype ♂. Body shape. Elongate ovoid. Length 15.0 mm. Width 8.3 mm.

Color. Ventral surface dark castaneous with very weak metallic green shine; only tibiae and tarsi stronger dark metallic green; head, pronotum and scutellum castaneous with weak iridescent metallic shine; frons and vertex somewhat darker, almost black; clypeus with coppery luster; elytra medium brown.

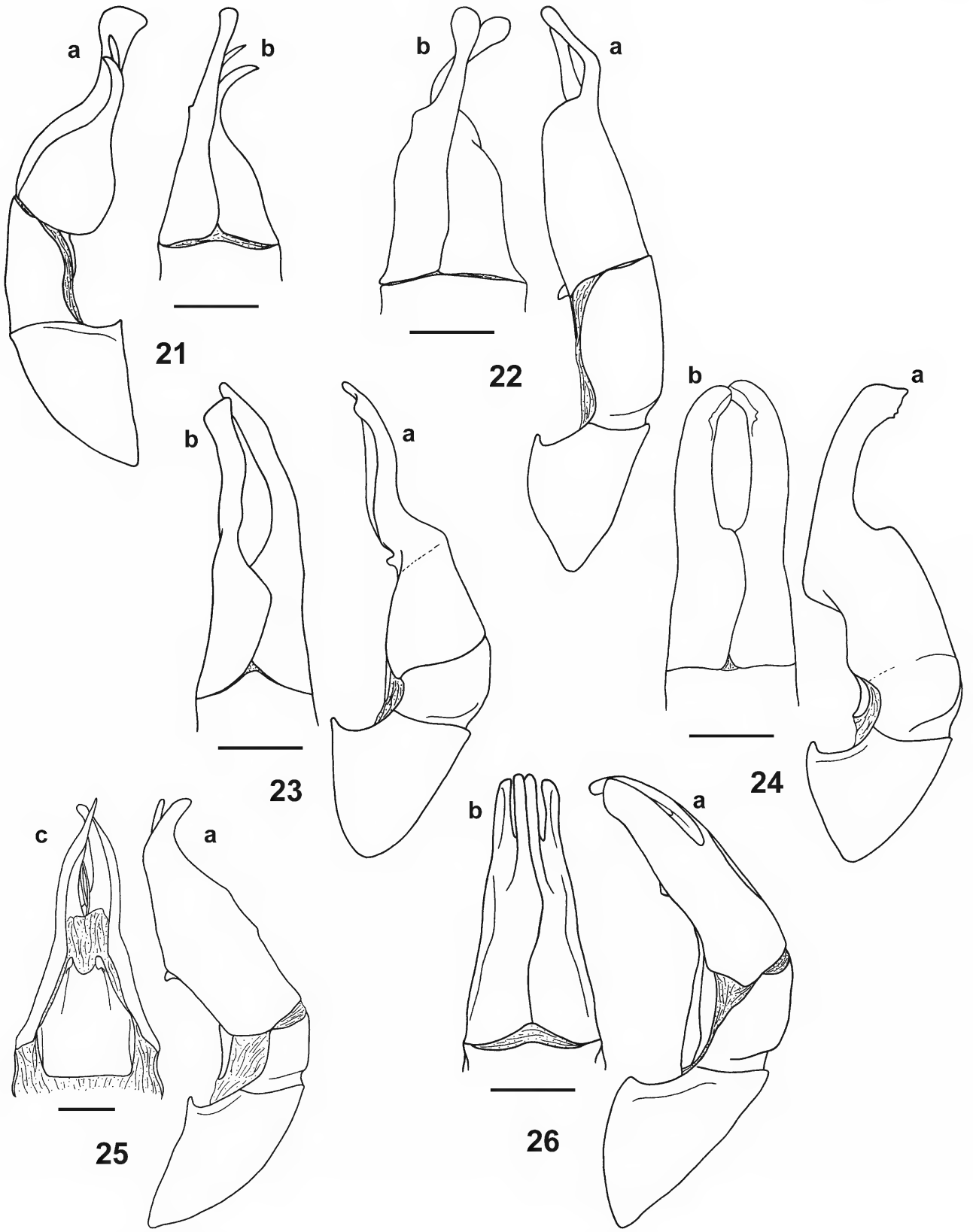
Head. Clypeus subrectangular with rounded corners, moderately reflexed; punctation dense and partly coalescing; frons with a densely punctate shallow impression; vertex sparsely and finely punctate; ratio interocular distance/width of head: 0.64; antennal club distinctly longer than segments 2–7 combined.

Pronotum. Sides subparallel in the posterior two-thirds; strongly convergent in the anterior third; anterior angles square and produced; posterior angles obtuse, rounded; middle weakly sulcate in the anterior part; basal marginal line interrupted anterior to scutellum; punctation moderately fine and moderately dense.

Elytra. Regularly striate-sulcate with convex primary and secondary costae; subsutural interstice with two very irregular secondary striae which unite before the apex and several additional irregular punctures near the scutellum; secondary rows of punctures in the second and third interstices show longer distances between the punctures than those of the primary rows; hind margin regularly rounded; whole elytral surface with additional sparse micropunctation.



Figs. 15–20. *Anomala* spp., holotypes, aedeagi in lateral (a), dorsal (b) and ventral (c) views. – **15**. *A. mausonica* n. sp. **16**. *A. atriventris* n. sp. **17**. *A. oehleri* n. sp. **18**. *A. rubida* n. sp. **19**. *A. monogramma* n. sp. **20**. *A. porrecta* n. sp. – Scales: 1 mm.



Figs. 21–26. *Anomala* spp., holotypes, aedeagi in lateral (a), dorsal (b) and ventral (c) views. – **21**. *A. pacholatkoi* n. sp. **22**. *A. limbourgi* n. sp. **23**. *A. langbianensis* n. sp. **24**. *A. cognata* n. sp. **25**. *A. ahrensi* n. sp. **26**. *A. keithi* n. sp. – Scales: 1 mm.

Pygidium. Strongly tumid; with dense, transversely confluent punctures which are arranged concentrically around the tumidity; with sparse, long, erect setae.

Abdominal sternites. Sides not carinate.

Metasternum. Laterally with dense, ocellated punctures and moderately long suberect setae.

Legs. Slender; metatibia weakly fusiform; lateral tooth of protibia distinct, acute; modified pro- and mesotarsal claw apically bifid; the former with an obtuse angle at its ventral margin.

Aedeagus. See Fig. 20.

♀♀. Antennal club slightly longer than antennomeres 2–7 combined. Sides of pronotum parallel in the posterior two-thirds. Pygidium moderately tumid. Terminal tooth of protibia long, curved outwards. Bifid protarsal claw more slender.

Variability

Body length 12.5–15.0 mm. Body width 6.9–8.5 mm. Sides of pronotum slightly sinuate before the posterior angles. Subsutural interstice sometimes entirely irregularly punctate in the anterior three-fourths.

Differential diagnosis

Anomala porrecta has regularly striate elytra in combination with a strongly asymmetric aedeagus with a deeply incised left paramere. From other Asian species with these characters (*A. oehleri* n. sp., *A. machatschkei*, *A. triancistris*, *A. rubida* n. sp., *A. monogramma* n. sp., *A. pacholatkoi* n. sp., *A. limbourgi* n. sp., and *A. punctulicollis* sensu Paulian 1959), *A. porrecta* is separated by the ventral plate bearing a strong hook and by the right paramere being very elongate. Moreover, the body color (castaneous, elytra medium brown) is not found in any of the aforementioned species.

Distribution

China: provinces of Guangdong and Hongkong.

Anomala pacholatkoi **n. sp.**
(Figs. 7, 21)

Holotype ♂: "S Vietnam, 12.03N 108.27E, 12 km N of Dalat – Lang Bian, 1580–1750 m, 17.–21.IV.1995, Pacholátko & Dembický leg. | Coll. P. Pacholátko Invt. No." (TICB, later NMPC).

Paratypes: 3♂♂, 3♀♀, same data as holotype (CZPC, TICB). – 1 ♂, "Annam Dalat, 1500 m, [underside] 30.III.24 | 22.III. [underside] lensis [sic!]" (MNHB). – 1 ♀ "Annam Dang Kia, 1450 m, [underside] 2.IV.1924. | *Anomala dalatina* Ohs." (MNHB).

Etymology

The new species is dedicated to the collector of a large part of the type material, the Czech scarabaeidologist Petr Pacholátko (Brno).

Description

Holotype ♂. Body shape. Elongate ovoid. Length 13.9 mm. Width 7.9 mm.

Color. Entirely dark castaneous to blackish brown with weak metallic green shine; elytra, tibiae and tarsi darker, almost black.

Head. Clypeus almost rectangular with subparallel sides; moderately reflexed, with rounded corners; with very dense, partly coalescing, moderately fine punctures; frons somewhat flattened, less densely punctate than the clypeus; vertex sparsely punctate; ratio interocular distance/width of head: 0.59; antennal club longer than segments 2–7 combined.

Pronotum. Sides slightly convergent in the posterior two-thirds, strongly convergent in the anterior third; anterior angles acute and produced; posterior angles obtuse, weakly rounded; interruption of the basal marginal line broader than the scutellum; with regular, moderately fine, moderately dense punctation; some punctures coalescing at the lateral margins.

Elytra. Regularly striate; striae sulcate; intervals convex; subsutural interstice with a secondary stria which becomes irregular in the anterior third; therefore, subsutural interstice with two secondary costae in the posterior two-thirds; secondary rows of punctures of the second interstice nearly absent, that of the third interstice present but abbreviated and not sulcate; hind margin regularly rounded; whole elytral surface with distinct, sparse micropunctation.

Pygidium. Strongly tumid; punctures coalescing to fine transverse reticulation which is arranged concentrically around the tumidity; entirely but sparsely covered with long erect setae.

Abdominal sternites. Sides not carinate.

Metasternum. Laterally with dense, ocellated punctation and long suberect setae.

Legs. Slender; metatibia weakly fusiform; lateral tooth of protibia acute; modified pro- and mesotarsal claw apically bifid; modified claw of the protarsi expanded ventrally, but without obtuse angle.

Aedeagus. See Fig. 21.

♀♀. Antennal club subequal in length to antennomeres 2–7 combined. Sides of pronotum parallel. Pygidium moderately tumid. Protarsomere 5 not thickened. Bifid protarsal claw more slender.

Variability

Body length 12.1–13.9 mm. Body width 7.3–7.9 mm. Color ranging from uniformly medium or castaneous brown to black brown. Pronotum sometimes weakly sulcate in the middle. Secondary row of punctures of second interstice sometimes reduced to a few scattered single punctures or nearly absent. Shape of the aedeagus without any notable variation among the specimens examined.

Differential diagnosis

Anomala pacholatkoi shares the strongly asymmetric aedeagus with a deeply incised left paramere in combination with regularly striate elytra with *A. oehleri* n. sp., *A. machatschkei*, *A. triancistris*, *A. rubida* n. sp., *A. monogramma* n. sp., *A. porrecta* n. sp., *A. limbourgi* n. sp., and *A. punctulicollis* sensu Paulian (1959). From all these species *A. pacholatkoi* is separated by the dark coloration and by the specific shape of the parameres. The most similar species is *A. limbourgi* n. sp. with which it has in common the nearly absent secondary stria of the second interstice and the punctation pattern of the subsutural interstice which is divided into two regular secondary costae in the posterior two-thirds. However, in contrast to *A. limbourgi* n. sp., the right paramere is long and drum-stick shaped and the left paramere is apically pointed, the point extending laterally.

Distribution

South Vietnam: Dalat, Dang Kia.

Anomala limbourgi **n. sp.**
(Figs. 8, 22)

Holotype ♂: "Coll. I. R. Sc. N. B., Cambodia, Bokor N. P., Hill Station, scrub, 22.IV.2005, light trap, leg. K. Smets & I. Var" (IRSNB).

Etymology

The new species is dedicated to my friend Pol Limbourg (IRSNB).

Description

Body shape. Elongate ovoid. Length 14.8 mm. Width 8.5 mm.

Color. Entirely dark metallic green with dark castaneous ground color; elytra dark brown with strong iridescent luster; metatibia with weak coppery luster.

Head. Clypeus trapezoidal with subparallel sides; moderately reflexed, with rounded corners; with very dense, partly coalescing, moderately fine punctures; frons somewhat flattened, less densely punctate than the clypeus; vertex finely punctate; ratio interocular distance/width of head: 0.60; antennal club longer than segments 2–7 combined.

Pronotum. Sides slightly convergent in the posterior two-thirds, strongly convergent in the anterior third; anterior angles acute and produced; posterior angles obtuse, weakly rounded; interruption of the basal marginal line broader than the scutellum; with regular, moderately fine, moderately dense punctation; some punctures coalescing at the lateral margins.

Elytra. Regularly striate; striae sulcate; intervals convex; subsutural interstice with a secondary stria that becomes irregular in the anterior third; therefore, subsutural interstice with two secondary costae in the posterior two-thirds; secondary row of punctures of the second interstice nearly absent, that of the third interstice present but abbreviated and not sulcate; hind margin regularly rounded; entire elytral surface with distinct, sparse micropunctation.

Pygidium. Tumid; with fine transverse reticulation which is arranged concentrically around the tumidity; with long erect setae at the apex.

Abdominal sternites. Sides not carinate; sternites 2–5 with a regular transverse row of semi-erect setae.

Metasternum. Laterally with dense, ocellated punctation and moderately long suberect setae.

Legs. Slender; metatibia weakly fusiform; lateral tooth of protibia right-angled; terminal tooth moderately long; modified pro- and mesotarsal claw apically bifid; modified claw of the protarsi widened on ventral margin, but without distinct tooth.

Aedeagus. See Fig. 22.

Differential diagnosis

Anomala limbourgi appears to be the nearest known relative of *A. pacholatkoi*. It is distinguished from that species by the larger body size, the color contrast between elytra and forebody, the more trapezoidal clypeus, the shorter setosity of the lateral metasternum, and distinctly different shape of the aedeagus.

Distribution

Cambodia: Bokor, Dâmrei Mountains.

Anomala langbianensis **n. sp.**
(Figs. 9, 13, 23)

Holotype ♂: "S Vietnam, 30 km NW Dalat Long Lanh v., 1400 m, 12.IV.2007, P. Udovichenko leg." (CZPC).

Paratypes: 4♂♂, 9♀♀, same data as holotype (ARPC, CZPC, MNHB). – 9♂♂, 2♀♀, "S Vietnam, 12.03N 108.27E, 12 km N of Dalat – Lang Bian, 1580–1750 m, 17.–21.IV.1995, Pacholátko & Dembický leg. | Coll. P. Pacholátko Invt. No." (CZPC, TICB).

Etymology

Anomala langbianensis is named after Mt. Lang Bian in southern Vietnam.

Description

Holotype ♂. Body shape. Elongate; sides subparallel. Length 13.4 mm. Width 7.3 mm.

Color. Ground color testaceous with green and pinkish metallic luster; pygidium dark metallic green with a central yellow spot; posterior margin of abdominal sternite 2, sternites 3–6 and the central part of the metasternum coppery; sides of metasternum and lateral surface of metatibia dark metallic green.

Head. Clypeus subtrapezoidal to semicircular; very densely, somewhat rugosely punctate; frons and vertex posteriad with gradually sparser and finer punctation; frons with shallow impression; ratio interocular distance/width of head: 0.66; antennal club longer than segments 2–7 combined.

Pronotum. Sides slightly convergent in the posterior two-thirds, strongly convergent in the anterior third; anterior angles acute and produced; posterior angles broadly rounded; basal marginal line interrupted anterior to scutellum; punctation very fine, moderately dense.

Elytra. Regularly striate; primary striae somewhat sulcate; primary costae slightly more convex than interstices; subsutural interstice with irregular punctation; second and third interstice with secondary stria (irregularly punctate anteriad); fourth interstice with an indistinct row of punctures; hind margin regularly rounded; whole elytral surface with distinct, sparse micropunctation.

Pygidium. Tumid; with fine transverse reticulation which is arranged concentrically around the tumidity; with scattered long erect setae at the apex.

Abdominal sternites. Sides not carinate.

Metasternum. Laterally with dense, ocellated punctation and long suberect setae.

Legs. Moderately slender; metatibia somewhat fusiform; lateral tooth of protibia small and acute; terminal tooth rather short; modified pro- and mesotarsal claw apically bifid; the former enlarged and bearing a small tooth at its ventral margin.

Aedeagus. See Fig. 23.

♀♀. Sides of pronotum subparallel in the posterior half. Tumidity of pygidium weaker than in males. Metatibia more robust; terminal tooth of protibia spatuliform; bifid protarsal claw more slender. Vaginal palps peculiarly claw-shaped (Fig. 9).

Variability

Body length 11.6–13.4 mm. Body width 6.5–7.4 mm. The shape of the parameres exhibits little variability.

Differential diagnosis

Anomala langbianensis is very similar to *A. cognata* but has a more slender body shape and more extended dark marks on pygidium and ventral face. The aedeagus has a similar structure but is different in detail. The parameres are apically bent right and ventrad.

Because of the ground coloration and the somewhat elongate body shape *A. langbianensis* is superficially similar to *A. viridimicans* Benderitter, 1929, *A. fuscosignata* Ohaus, 1905, and *A. luminosa* Benderitter, 1929 (which might be in fact a synonym of *A. fuscosignata*). In addition to the fact that based on aedeagal structure these species belong to different species groups, *A. langbianensis* is easily separated from the others by lacking dark markings on the pronotum. There is also some similarity to *A. oehleri*, *A. machatschkei*, and *A. triancistris*, but these species are distinctly larger and more ovate than *A. langbianensis*. The claw-shaped, pointed vaginal palps are very distinctive for females of this species.

Distribution

Anomala langbianensis is only known from the Da Lat plateau in southern Vietnam.

Anomala cognata **n. sp.**
(Figs. 10, 14, 24)

Holotype ♂: "Annam Dalat, 1500 m, [underside] 26.III.1924 | *Anomala susila* Ohs. [Ohaus's handwriting]" (MNHB).

Paratypes: 1 ♀, "Annam Dalat, 1500 m | ♀" (MNHB). – 2 ♀♀ "S Vietnam, 14.10N 108.30E, 40 km NW of An Khe Buon Luoi, 620–750 m, 28.III.–12.IV.1995, Pacholátko & Dembický leg. | Coll. P. Pacholátko Invt. No." (CZPC, TICB).

Etymology

The Latin adjective "cognatus" stands for "similar" or "related" and refers to the close resemblance of *A. cognata* to *A. langbianensis*.

Description

Holotype ♂. Body shape. Stout, sides subparallel. Length 14.0 mm. Width 8.3 mm.

Color. Ground color dark testaceous with green and pinkish metallic luster; head, metatibia and metatarsus weakly coppery.

Head. Clypeus subtrapezoidal to semicircular; very densely, somewhat rugosely punctate; frons and vertex with gradually sparser and finer punctuation posteriorly; frons with shallow impression; ratio interocular distance/width of head: 0.67; antennal club longer than segments 2–7 combined.

Pronotum. Sides subparallel in the posterior two-thirds, strongly convergent in the anterior third; anterior angles acute and produced; posterior angles broadly rounded; basal marginal line entire; punctation fine, rather shallow, moderately dense.

Elytra. Regularly striate; primary striae somewhat sulcate; primary costae slightly more convex than interstices; subsutural interstice with irregular punctation; second and third interstice with secondary stria (irregularly punctate anteriad); fourth interstice with an indistinct row of punctures; hind margin regularly rounded; whole elytral surface with distinct, sparse micropunctation.

Pygidium. Tumid; finely, transversely striolate; striolae arranged concentrically around the tumidity; with scattered long erect setae at apex.

Abdominal sternites. Sides not carinate.

Metasternum. Laterally with dense, ocellated punctation and long suberect setae.

Legs. Moderately slender; metatibia fusiform; lateral tooth of protibia small and acute; terminal tooth rather short; modified pro- and mesotarsal claw apically bifid; the former enlarged and with a blunt angle ventrally.

Aedeagus. See Fig. 24.

♀♀. Pronotum more convex, sides subparallel in the posterior half. Tumidity of pygidium weaker than in males. Metatibia more robust; terminal tooth of protibia spatuliform; bifid protarsal claw more slender. Apex of vaginal palps rounded with crenulate margin (Fig. 14).

Variability

Body length 13.8–14.9 mm. Body width 8.1–8.5 mm. The ground color of the two old specimens (including the holotype) from the MNHB is darker than that of more recently collected specimens from the TICB, but this could also be the result of different preservation techniques. The two females from An Khe Buon Luoi show two dark spots at the base of the pygidium which are missing in the two specimens from Dalat. The intensity and hue of the metallic reflection varies slightly between specimens. The basal marginal line of the pronotum is sometimes indistinct anterior to the scutellum.

Differential diagnosis

Anomala cognata n. sp. is extremely similar to *A. langbianensis* but is easily distinguished by a slightly larger, distinctly stouter body shape. In fact, it appears like a stout "version" of the foregoing species. Moreover, *A. cognata* is separated from *A. langbianensis* by reduced dark coloration on pygidium and ventral surface and by apically rounded vaginal palps. The parameres are distinctly bent upwards and are equipped with a little crenulate ridge apically.

Remarks

It is interesting to note that the probably very closely related species *A. langbianensis* and *A. cognata* occur sympatrically in southern Vietnam; while no other close relative has been discovered among the fauna of southeastern Asia.

Distribution

Anomala cognata is only known from Buon Luoi (An Khe district, central Vietnam) and the Da Lat plateau in southern Vietnam.

Anomala ahrensi **n. sp.**
(Figs. 11, 25)

Holotype ♂: "N-Vietnam, Tam Dao, Vinh Phu Prov., 21°27'18"N 105°38'58"E, 1050–1200 m, 2.–6.VI.1999, leg. Fabrizi, Jäger, Ahrens" (SMTD).

Paratypes: 2 ♂♂, "N.-Vietnam, Vinh Phu Prov., Tam Dao, 1.–7.V.1998, Y. Arita leg." (CZPC). – 5 ♂♂, 7 ♀♀, "N.-Vietnam, Vinh Phu Prov., Tam Dao, 930 m, VI.–VIII.1997, native collector" (CZPC). – 1 ♂, "N. Vietnam, Vinh Phu, Tam Dao, 28.–30.V.1995, coll. C. L. Li" (CZPC). – 1 ♂, "Vietnam, Hanoi env., 4.–15.V.1990, Svoboda lgt." (CZPC). – 1 ♂, "Tam Dao, Vietnam, 8.–22.V.1990, Dudvcha Miloč" (CZPC). – 10 ♂♂, 6 ♀♀, "Vietnam, Tam-Dao, 6.–23.V.1990, B. Makovský lgt." (ARPC, CZPC, SMTD). – 1 ♂, "N-Vietnam, SA PA env., Lao Cai Prov., 22°19'52"N 103°50'35"E, 1630–1680 m, 23.–27.V.1999, leg. Fabrizi, Jäger, Ahrens" (CZPC). – 1 ♂, "N Viet Nam (Tonkin), pr. Hoang Lien Son, SA PA, 11.–15.V.1990, P. Pacholátko leg." (TICB). – 1 ♂, "Tamdao near Hanoi, Vietnam, 1990, leg. Masao Ito | K. Wada Col No. 521 | Kaoru Wada Collection 2002" (KWPC). – 1 ♂, "Vietnam, Tam Dao, 27.V.–2.VI.1986, Vinh phu prov., Jan Horák lgt." (JSPC). – 1 ♂, "Vietnam, N Tam Dao, 26.V.–3.VI.1986, Vinh phu prov., Strnad Jan lgt." (JSPC).

Etymology

The new species is dedicated to my friend Dirk Ahrens (Bonn) who collected the holotype.

Description

Holotype ♂. Body shape. Elongate ovoid. Length 16.6 mm. Width 9.6 mm.

Color. Head, pronotum, tibiae and tarsi dark castaneous with strong metallic green luster; pronotum with yellow sides; elytra medium brown with weaker metallic green luster; suture and a vague spot on humeral and apical umbo dark; basal half of pygidium dark castaneous with strong metallic green luster, apical half yellow with weak metallic green luster; ventral surface including antenna, femora and ventral surface of pro- and mesotibia light brown with weak metallic green shine, abdominal sternites 3–5 somewhat darker; dorsal surface with distinct iridescent hue.

Head. Clypeus trapezoidal, with a weakly reflexed anterior margin; corners rounded; clypeus and frons with fine confluent punctation; vertex with finer, separated punctures; ratio interocular width/width of head ca. 0.63; antennal club distinctly longer than segments 2–7 combined.

Pronotum. Sides subparallel in the posterior half, strongly convergent towards the acute and strongly produced anterior angles; posterior angles obtuse, rounded; basal marginal line absent; with very dense, transversely confluent punctation.

Elytra. Regularly striate-sulcate; intervals moderately convex; subsutural interstice anteriorly with irregular stria-type punctures (without microseta, horseshoe-shaped) which form a secondary stria in the apical third; strial punctation obscured by very dense, moderately fine, irregular punctures.

Pygidium. Tumid; punctation transversely striolate, arranged concentrically around the tumidity; with long erect setae apically.

Abdominal sternites. Sternites 1–3 with weak lateral carina.

Metasternum. With very dense, coalescing punctures and moderately long, suberect setae.

Legs. Middle and hind legs slender; metatibia weakly fusiform; protibia broad and somewhat flattened, bidentate, with short lateral and terminal tooth; protarsi enlarged; modified claw of pro- and mesotarsi apically bifid; the former with a very small upper branch, not enlarged or angulate ventrally.

Aedeagus. See Fig. 25.

♀♀. Antennal club subequal in length to antennomeres 2–7 combined. Pygidium not tumid. Sides of pronotum more evenly rounded. Hind tibia stouter. Terminal tooth of protibia tongue-shaped. Bifid protarsal claw more slender.

Variability

Body length 16.1–18.6 mm. Body width 9.1–10.9 mm. The extension of the dark basal mark of the pygidium varies in size; sometimes it encompasses the basal angles, sometimes it is reduced to a median basal patch. The three specimens from Sa Pa differ from those from Tam Dao in having distinctly darker green elytra; whether this is taxonomically significant or not is uncertain. The male genitalia, however, do not show constant differences.

Differential diagnosis

Anomala ahrensi is very similar and probably closely related to *Mimela kuatuna* Machatschke, 1955. The latter species is here transferred to the genus *Anomala* (**n. comb.**). *A. ahrensi* is slightly larger than *A. kuatuna*, the apices of the parameres are less abruptly bent upwards, and the prosternal process is missing. For further explanation on the generic placement see below in Remarks. Both, *A. ahrensi* and *A. kuatuna* are superficially similar to *A. aulax* (Wiedemann, 1823), *A. delavayi* Fairmaire, 1886, and *A. aulacoides* Ohaus, 1915, but the aedeagal structure does not suggest a close relationship with these species.

Remarks

The genus *Mimela* Kirby, 1823 (type species: *Mimela chinensis* Kirby, 1823) is based on the presence of a prosternal process, and since the revision of the genus by Ohaus (1943) all Anomalini exhibiting a prosternal protrusion are included here (Machatschke 1952, 1972; Zorn 2004, 2006). However, already Ohaus (1902) found "transitional" forms among afrotropical species, and Arrow (1917) pointed out the fact that strictly placing species with prosternal process in the genus *Mimela* will probably segregate closely related species into different genera.

It is obvious that a prosternal process developed many times independently within the Scarabaeideae since it may be present or absent within several different higher taxa (e. g. Dynastinae, Aphodinae, Melolonthinae, Rutelinae). Probably such processes serve to stiften the junction between pro- and mesothorax similar to a "door stop". So far there is no evidence that the prosternal process within the Anomalini is a homologous structure. In contrast, there appear to be "groups" of *Mimela* species which have nothing in common except the prosternal protrusion, but appear to be related to species without prosternal process which are therefore included in the genus *Anomala*. Interestingly, these "odd" species groups of *Mimela* (e. g. *anopunctata*-group sensu Machatschke 1957, 1972, "*Paramimela*" Ohaus, 1915) usually show a weakly developed or spine-shaped prosternal process in contrast to the "typical" plough-shaped process as found in the type species *M. chinensis*. Recently, a small prosternal process was also found in species included in the genus *Pseudosinghala* Heller, 1891 (Zorn 2000).

The shape of the prosternal protrusion observed in *A. kuatuna* is unlike any other among the Anomalini because its apex is distinctly bifid (Machatschke 1955: fig. 7a–d). The relation between *A. ahrensi* and *A. kuatuna* provides new evidence that the presence of a prosternal process has limited value for higher level systematics. These two species can hardly be distinguished by external morphology except by *A. kuatuna* having a well developed prosternal process which is missing in *A. ahrensi*. In the latter species there is only a little keel-like structure between the procoxae, which is also present in many other *Anomala* species. Therefore, *A. kuatuna* is obviously a perfect example where the prosternal process is only an autapomorphy on the species level. This finding supports the thesis that the current conception of the genus *Mimela* (Ohaus 1943, Machatschke 1952, 1957, Zorn 2006) is a polyphyletic entity because the constitutive character is not homologous. The definition of *Mimela* should therefore be subjected to scrutiny in a phylogenetic analysis of the Anomalini.

Distribution

Anomala ahrensi is known from two mountainous localities in North Vietnam (Sa Pa, Tam Dao).

Anomala keithi **n. sp.**
(Figs. 12, 26)

Holotype ♂: "China, W-Yunnan, Daxueshan, 2600 m, Yongde, VI.2000, leg. Yin" (CZPC).

Etymology

The new species is dedicated to the scarabaeidologist Denis Keith (Chartres) who generously provided the type specimen.

Description

Body shape. Ovoid. Length 15.6 mm. Width 8.8 mm.

Color. Dark castaneous ground color obscured by a strong dark metallic green luster; pronotum strongly iridescent.

Head. Clypeus trapezoidal to semicircular, with a strongly reflexed anterior margin; clypeus and frons with

granulose surface; vertex finely punctate; ratio interocular width/width of head ca. 0.61.

Pronotum. Sides subparallel posteriorly, slightly sinuate before the subrectangular posterior angles, strongly convergent towards the acute and strongly produced anterior angles; basal marginal line present laterally, vanishing towards the middle; punctures transverse, very dense but not coalescent.

Elytra. Regularly striate; primary costae slightly more convex than interstices; subsutural interstice with irregular punctures between smooth secondary costae; second and third interstice with repeatedly interrupted secondary stria; whole elytra with irregular micropunctation; lateral margins strongly carinate in the anterior half.

Pygidium. Tumid; punctation transversely striolate, arranged concentrically around the tumidity; with long erect setae apically.

Abdominal sternites. Sternites 1–3 with weak lateral carina.

Metasternum. With very dense, coalescing punctures and moderately long, suberect setae.

Legs. Middle and hind legs slender; metatibia weakly fusiform; protibia broad and somewhat flattened (Fig. 12), bidentate, with short, obtuse lateral tooth and short terminal tooth that is approximately as long as broad at its base; protarsi distinctly thickened; protarsomeres 2–4 ca. 1.5 times as wide as long; modified claw of pro- and mesotarsi apically bifid; the former with a very small upper branch and with the lower branch not angulate ventrally.

Aedeagus. See Fig. 26.

Differential diagnosis

Anomala keithi does not appear to be closely related to any of the currently known *Anomala* species. It is remarkable for its enlarged protarsi, somewhat flattened protibia and peculiar aedeagus with the apically bifid parameres.

Distribution

Anomala keithi is only known from the type locality Daxue Shan in western Yunnan (China).

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4 References

Arrow, G. J. (1917): The fauna of British India, including Ceylon and Burma. Coleoptera Lamellicornia part II (Rutelinae, Desmonycinae, and Euchirinae), 387 pp, 5 pls.; London (Taylor & Francis).

Fairmaire, L. (1893): Coléoptères du Haut Tonkin. – Annales de la Société entomologique de Belgique **37**: 303–325.

Lin, P. (1999): New species of the genus *Anomala* Samouelle (Coleoptera: Rutelidae) collected in Yunnan, China. – Entomotaxonomia **21**: 157–176 [in Chinese and English].

Lin, P. (2002): Rutelidae. – In: Huang Bangkan (ed.): Fauna of insects in Fujian Province of China, vol. **6**., pp. 387–427; Fuzhou (Fujian Science & Technology Press) [in Chinese and English].

Machatschke, J. W. (1952): Beiträge zur Kenntnis des Genus *Mimela* Kirby (Coleoptera: Scarabaeidae, Rutelinae) I. Teil. – Beiträge zur Entomologie **2**: 333–369.

Machatschke, J. W. (1955): Zur Kenntnis der Ruteliden Süd-Chinas (Coleoptera: Scarabaeidae, Rutelinae). – Beiträge zur Entomologie **5**: 500–510.

Machatschke, J. W. (1957): Coleoptera Lamellicornia Fam. Scarabaeidae Subfam. Rutelinae 2. – In: Wytsman, P. A. G. (ed.): Genera insectorum **199** (B), pp. 1–219, 6 pls.; Brussels (Desmet-Verteneuil).

Machatschke, J. W. (1972): Scarabaeoidea: Melolonthidae, Rutelinae. – Coleopterorum Catalogus, Supplementa **66** (1), 361 pp.; 's-Gravenhage (W. Junk).

Ohaus, F. (1902): Verzeichniss der von Herrn Dr Yngve Sjöstedt in Kamerun gesammelten Ruteliden (Coleoptera lamellicornia). – Öfversigt af Kongliga Vetenskaps-Akademiens Förhandlingar **10**: 343–352.

Ohaus, F. (1943): Revision der Gattung *Mimela* Kirby (Col. Scarab. Rutelin.). – Deutsche entomologische Zeitschrift **1943**: 65–88.

Paulian, R. (1959): Coléoptères Scarabéides de l'Indochine (Rutélines et Cétonines) (suite). – Annales de la Société entomologique de France **128**: 35–136.

Samouelle, G. (1819): The entomologist's useful compendium; or an introduction to the knowledge of British insects, 448 pp, 12 pls.; London (Th. Boys).

Zorn, C. (2000): A new species of the genus *Pseudosinghala* Heller, 1891 from Sumatra and Nias (Insecta: Coleoptera: Scarabaeidae: Rutelinae). – Reichenbachia **50**: 391–394.

Zorn, C. (2004): Taxonomical acts in the Anomalini initiated during the preparation of the "Catalogue of Palaearctic Coleoptera". – Acta Societatis Zoologicae Bohemicae **68**: 310–328.

Zorn, C. (2006): Anomalini. – In: Löbl, I. & Smetana, A. (eds.): Catalogue of Palaearctic Coleoptera. Vol. 3. Scarabaeoidea – Scirtoidea – Dascilloidea – Buprestoidea – Byrrhoidea, pp. 251–276; Stenstrup (Apollo Books).

New and little known Rhinophoridae (Diptera) from Turkey

Theo Zeegers

Abstract

Three new species of Rhinophoridae are described from Turkey: *Phyto anatolica* **n. sp.**, *Oplisa hertingi* **n. sp.** and *O. nudiseta* **n. sp.** A key to the species of *Oplisa* subgenus *Anoplisa*, a diagnosis of *Oplisa (Anoplisa) oldenbergi* Herting, 1961, and a redescription of *O. (A.) pollinosa* Kugler, 1978 (from Israel) are provided. Notes on the identity of *Stevenia kugleri* Herting, 1961 are given.

Keywords: Rhinophoridae, Turkey, new species, new records.

Zusammenfassung

Drei neue Arten der Dipteren-Familie Rhinophoridae aus der Türkei werden beschrieben: *Phyto anatolica* **n. sp.**, *Oplisa hertingi* **n. sp.** und *O. nudiseta* **n. sp.** Ein Schlüssel für die Arten der Untergattung *Anoplisa* der Gattung *Oplisa*, eine Diagnose von *Oplisa (Anoplisa) oldenbergi* Herting, 1961 und eine erweiterte Beschreibung von *O. (A.) pollinosa* Kugler, 1978 (aus Israel) werden gegeben. Angaben zur Identität von *Stevenia kugleri* Herting, 1961 werden gemacht.

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1 Introduction

Rhinophoridae is a relatively small family of Diptera consisting of mostly small, sometimes medium-sized calyptrate flies (Pape 1998). The current understanding of the limits of this family has been formulated by Crosskey (1977), Pape (1986), and Pape & Arnaud (2001). Keys for identification of the species of the Palaearctic fauna are given by Herting (1961), supplemented by Kugler (1978) with additions for Israel and Pape & Kurahashi (1994) for Japan. Herting (1993) lists the Palaearctic genera and species. Crosskey (1977) provides a key to the Afrotropical species. Recently some new Palaearctic species have been described in the genera *Stevenia*, *Baniassa*, and *Melanophora* (Cerretti & Pape 2007, 2009; Zeegers 2008); a new genus *Alvamaja* was described by Rognes (2010).

Collecting by several dipterologists in Turkey in the last decades has revealed three new species of Rhinophoridae which are described here: one in the genus *Phyto* and two in the genus *Oplisa*, subgenus *Anoplisa*.

To prevent the few available males from damage, it was decided not to make genital preparations. All new species are well recognizable by their outer morphology.

The morphological terminology follows Oosterbroek et al. (2005).

Acknowledgements

The author is grateful to Nikita Vikhrev (Moscow) who made much material available, to Hans-Peter Tschorsnig (SMNS) who loaned material of *Oplisa hertingi* n. sp. and *O. pollinosa* and commented on an earlier version of the manuscript, and to Joachim Ziegler (Berlin) who shared his views on *Oplisa oldenbergi* and the genus *Stevenia*. Thanks are also due to the referees Pierfilippo Cerretti (Rome) and Thomas Pape (Copenhagen) who provided valuable suggestions.

Acronyms of depositories

CJZ	Collection Joachim Ziegler, Berlin, Germany
CTZ	Collection Theo Zeegers, Soest, the Netherlands
SDEI	Senckenberg Deutsches Entomologisches Institut, Müncheberg, Germany
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany

2 Genus *Phyto* Robineau-Desvoidy, 1830

The genus *Phyto* is – within the Palaearctic Region – generally well characterized by the shape of the head and the wing venation (Herting 1961). The first postsutural supra-alar (or pre-alar) seta is long for all known species, with the exception of *P. pauciseta* Herting, 1961 and the newly described species.

Phyto anatolica **n. sp.**
(Figs. 1–6)

Holotype (♂): Turkey, Province Aksaray, Sultanhanı, 1050 m, 17.V.2002, leg. T. Zeegers (SMNS).

Paratypes: 2♀♀, same data as holotype (SMNS, CTZ); 1 ♀, same data as holotype, but 19.V.2002 (CTZ).

Collection circumstances: The type locality is situated in Central Anatolia just east of Sultanhanı. The specimens were collected at evening in a ditch along the road to Aksaray, at a site consisting of meadows with remnants of wetlands. No material was found in the middle of the day.

Etymology

The species name is derived from the Turkish region Anatolia where the type material has been collected. It should be treated as a Latin adjective.

Description

Male:

Body length 6–7 mm.

General colouration black with greyish pruinescence. Fronto-orbital plate (= parafrontal) and parafacial silvery grey. Legs, palpus and antenna black, only second segment of antenna brownish at apex. Thorax greyish with 3 very narrow central black vittae and 1 pair of very broad sublateral dark vittae. Syntergite 1+2 dark, other tergites dark with greyish band on anterior half, broadly interrupted at middle. Wings slightly yellowish, tegula black, basicosta light yellow, lower calypter white, halter yellow.

Head: Vertex narrow, width of frons at its narrowest point about two-fifths of an eye in dorsal view (Fig. 2). Frontal stripe very narrow before ocelli, fronto-orbital plates nearly touching each other. Lunula bare. Head in lateral view with slightly projecting lower facial margin, vibrissa high above lower facial margin (Fig. 1). Parafacial more than twice as wide as third antennal segment. Gena similarly wide, about one-third of greater diameter of the eye and about as long as third antennal segment. Antenna short, third segment widening towards apex, about 2.5 times as long as broad at its base and slightly less than twice as long as second segment. Arista thickened only at basal quarter, long plumose. Fronto-orbital plates with a row of crossed frontal setae on anterior three-fourths, otherwise bare; parafacial over its total length sparsely covered with very small setulae. Ocellar setae strong, proclinate, inner vertical seta slightly smaller, outer vertical seta absent. Prementum nearly as long as height of head [lacking in ♂ holotype but present in ♀♀ paratypes]. Setulae on gena and occiput all black.

Thorax with 2+1 acrostichal setae (only the pair before the scutellum distinct), 2+3 dorsocentral setae, 0+2 intra-alar setae (presutural intra-alar seta hair-like), 3 katepisternal (sternopleural) setae, the lower one smaller; postpronotum with 3 setae, the inner one much smaller, the middle one placed slightly anteriorly. First postsutural supra-alar seta short, about half as long and strong as the notopleural setae (Fig. 3). Anepimeral (pteropleural) seta weak, hair-like, katepimeron (barette) bare, notopleura with 2 setae, otherwise bare (with 1–2 additional hairs in some female paratypes). Metathoracic spiracle with two fringes of hairs, without obvious cover ('operculum'). Scutellum with strong crossed apicals and strong subapicals; basals hair-like.

Front tibia with 2 anterodorsal and 1 posteroventral setae, anterodorsal and dorsal preapical seta strong, subequal in length; middle tibia with 2 anterodorsal, 2 posterodorsal and 1 posteroventral setae; hind tibia with 1–2 anteroventral, 2–3 anterodorsal and 2–3 posterodorsal setae, with 3 dorsal preapicals. Claws and pulvilli about as long as last tarsal segment.

Wings with a strong costal spine, about as long as crossvein r-m; base of vein R_{4+5} with 2 setulae dorsally. Cell r_{4+5} with a short petiole which is twice as long as its width, postangular section of vein M straight (as in Fig. 5).

Abdomen elongated (Fig. 4). Tergites without discal setae; syntergite 1+2 without marginal setae; tergite 3 with a row of hair-like marginal setae which become stronger towards the lateral margin; tergites 4 and 5 with a row of marginal setae.

Female differs from male as follows:

Width of frons at its narrowest point about four-fifths of an eye in dorsal view, frontal stripe nearly as wide as fronto-orbital plate (Fig. 6). Fronto-orbital plate with 2 proclinate and one lateroclinate orbital setae. Outer vertical seta present, half as long as inner vertical. Abdomen strongly flattened dorsoventrally, tergites black, tergites 3 and 4 with a pair of silvery spots on the posterior fourth. Tergite 5 entirely shining black.

Differential diagnosis

First postsutural supra-alar seta short, a feature otherwise in *Phyto* only known from *P. pauciseta*. *P. anatolica* n. sp. can be recognized in the genus *Phyto* by the following key:

1 First postsutural supra-alar seta strong, about as long as first dorsocentral seta behind the suture and the strongest notopleural seta. ♂ with strong anteroventral seta on middle tibia. ..... all other *Phyto*

– First postsutural supra-alar seta weak, at most half as long as first dorsocentral seta behind the suture and the strongest notopleural seta. ♂ without a strong anteroventral seta on middle tibia. **2**

2 Middle tibia with 1 anterodorsal seta. Wing cell r_{4+5} open or just closed at the wing margin. Katepimeron and lunula with setulae (according to Pape 1998). ..... ***P. pauciseta*** Herting, 1961

– Middle tibia with 2 anterodorsal setae. Wing cell r_{4+5} shortly petiolate (Fig. 5). Katepimeron and lunula bare. ..... ***P. anatolica* n. sp.**

3 Genus *Oplisa* Rondani, 1862

The genus *Oplisa* is characterized by the narrow parafacial without setae and the postpronotum having three setae standing in a distinct triangle (PAPE 1998). HERTING (1961) included three species of *Oplisa* (as *Hoplisa*) from the Palaearctic region and splitted the genus into two subgenera, *Oplisa* s. str. and the newly established *Anoplisa*. KUGLER (1978) added two new species, of which *O. pollinosa* fits into the subgenus *Anoplisa*, but shares one feature with *Oplisa* s. str. (the strong setula on the base of vein R_{4+5}). In the present paper, I describe two additional species of *Oplisa*, *O. nudiseta* and *O. hertingi*, both fitting into the subgenus *Anoplisa*.

Oplisa hertingi n. sp.
(Figs. 9–12)

Holotype (♂): Turkey, Province Hakkari, Habur Deresi-Tal[= valley], S 'Beylisebap' [= Beytüşşebap], 1100 m, 10.VIII.1983, leg. W. SCHACHT (SMNS).

Paratypes: 1♀, same data as holotype; 1♂, 2♀♀, Turkey, Province Hakkari, Habur, Sat Dağ[ı], Varegös, SW Yüksekova, 1700 m, 4.–8.VIII.1983, leg. W. SCHACHT (all SMNS).

Etymology

The material of the new species was found stored in the collection of SMNS, bearing a label '*Oplisa* sg. *Anoplisa* spec. nov.' in the handwriting of the late BENNO HERTING (1923–2004). HERTING never got to publish his discovery. It is my pleasure to name this new species after this excellent Tachinidae and Rhinophoridae specialist.

Description

Male:

Body length 4.0–5.5 mm.

Generally greyish species (Fig. 9). Antenna dark, tip of second segment orange. Palpus dark yellow, darker to the tip. Thoracic dorsum with silvery greyish pruinescence, leaving a narrow median dark vitta (not quite reaching the scutellum) and a pair of broader lateral vittae, interrupted at suture (pattern best seen obliquely from behind). Scutellum dark grey with yellowish tip. Legs black. Wings clear, yellowish at base, veins brown, more yellow near base. Lower calypter white, basicosta yellow, tegula black. Abdomen dorsally with silvery greyish pruinescence, leaving very narrow black hind margin to tergites and a narrow central black vitta (at most 1/7th of tergal width) with sharp border (Fig. 11). Greyish pattern folds over to ventral side, however, it does not reach the sternites. Epandrium dark.

Head: Dorsal view: width of frons at its narrowest point slightly narrower than an eye; frontal-orbital plate narrow, frontal stripe twice as broad. Lateral view (Fig. 10): eye very large, parafacial very narrow, not broader than base of arista, gena narrow, about as broad as width of third antennal segment, face much shorter than frons, lower facial margin slightly projecting. Antenna inserted slightly above middle of eye. Eye bare. Occiput completely covered with black hairs, inner vertical setae strong, converging near tip, outer vertical seta half as strong, differentiated from occipital hairs, ocellar setae rather strong, proclinate. Frontal setae descending to antennal base, 2 pairs of reclinate inner orbital setae, the posterior one directed obliquely outward and 2 pairs of proclinate outer orbitals, the posterior one smaller. Below these 3–4 pairs of much smaller, hair-like setae. Vibrissa very strong, facial ridge with 2 setae above vibrissa. Third antennal segment twice as long as broad and twice as long as second segment or slightly longer. Arista long (as long as vibrissa), long plumose, second segment slightly longer than broad, third segment thickened at basal eighth.

Thoracic dorsum with one pair of strong acrostichal setae (and an anterior hair-like pair) before suture, 1 pair of weaker acrostichal setae behind suture just before scutellum, other acrostichal setae present as hairs only, 2+3 dorsocentral setae, 0+2 intra-alar setae, first posterior supra-alar seta hair-like, third supra-alar seta weak, 2 posthumerals. 3 katepisternal setae, anepimeral seta strong, accompanied by a second, smaller one. Scutellum with 2 pairs of strong marginal setae, basal and apical, the latter crossed. Lower calypter diverging from thorax and metathoracic spiracle with two fringes of hairs, without obvious cover ('operculum').

Front tibia with 1 anterodorsal and 1 posteroventral seta, anterodorsal and dorsal preapical seta subequal in length or anterodorsal one slightly shorter; middle tibia with 1 anterodorsal and 2 posterodorsal setae; hind tibia with 2 anterodorsal, 2 posterodorsal, 2 anteroventral setae and 3 dorsal preapicals (anterodorsal, dorsal and posterodorsal). Tarsi, especially front and middle tarsi, elongated, metatarsus nearly as long as remainder of tarsus, claws and pulvilli nearly as long as last tarsal segment.

Wing with open cell r_{4+5} (Fig. 12). Bend of vein R_{4+5} gently curved. Crossvein dm-cu reaches vein M midway between crossvein r-m and bend of M. Section of M between dm-cu and bend 1.6–1.8 times postangular section of M. Base of vein R_{4+5} dorsally with 2–4 setulae of normal size, ventrally with 1–2 setulae. Setulae on first section of costa only slightly larger and less dense than on other sections of costa, costal spine hardly differentiated.

Abdomen with excavation of syntergite 1+2 reaching halfway the segment. Syntergite 1+2 and tergite 3 without median marginal and discal setae, tergites 4 and 5 with a row of marginal setae, no discal setae. Sternite 5 very large.

Female differs from male as follows:

Dark hind margins of tergites broader, occupying up to one-fourth of the segments. Width of frons at its narrowest

point slightly larger than width of an eye. Tergite 3 with indistinct marginal setae. Sternite 5 and genitalia inconspicuous. Tarsi less elongated, claws and pulvilli short. Middle tibia with an additional ventral seta.

Differential diagnosis

See key below.

Oplisa nudiseta **n. sp.**
(Figs. 13, 14)

Holotype (♀): Turkey, East 'Antalia' [=Antalya], 29.V.2006, leg. N. Vikhrev (SMNS).

Etymology

The species name refers to the characteristic, nearly bare [= nudus] arista [= seta] and should be treated as a Latin noun.

Description

Female:

Body length 5 mm.

Generally black and greyish species. Antenna dark, base of third segment orange. Palpus yellow. Thoracic dorsum with silvery greyish pruinescence and a rather indistinct pattern of dark vittae. Scutellum grey. Legs dark. Wings clear, veins brown. Lower calypter white, basicosta yellow, tegula black. Abdominal tergites 3–5 black, anterior third with silvery pruinescence which is broadly interrupted in the middle; the pattern is shifting and might occupy up to half of the tergites in posterior view (Fig. 14). Syntergite 1+2 with very small silvery transversal spots. Ventral side of tergites dark, however, strongly silvery shining when seen under specific angles.

Head: Dorsal view: width of frons at its narrowest point slightly narrower than an eye; fronto-orbital plate about as broad as frontal stripe at narrowest point, frontal stripe distinctly broadening towards antennal base. Lateral view (Fig. 13): eye very large, parafacial very narrow, not broader than base of arista, gena narrow, somewhat narrower than width of third antennal segment, face shorter than frons, lower facial margin slightly projecting. Antenna inserted slightly above middle of eye. Eye bare. Occiput completely covered with black hairs, inner vertical setae strong, converging near tip, outer vertical seta half as strong, ocellar setae weak, proclinate. Frontal setae descending beyond antennal base, 1 pair of reclinate inner orbital setae and 1 pair of proclinate outer orbitals present. Fronto-orbital plate with several hairs, 1–2 hairs posterior to outer orbitals stronger. Vibrissa very strong, facial ridge with 2 setae above vibrissa. Third antennal segment twice as long as broad and 2.5 times as long as second segment. Arista long (as long as vibrissa), apparently bare, at high magnification with hairs shorter than width of arista at base, second segment slightly longer than broad, third segment thickened only at basal one-sixth.

Thoracic dorsum with irregular acrostichal setae, 2+3 dorsocentral setae, 0+2 intra-alar setae, first posterior supra-alar seta and third superalar seta weak, 2 posthumerals. 3 katepisternal setae, anepimeral seta strong, accompanied by a second, smaller one.

Scutellum with 2 pairs of strong marginal setae, (sub) basal and apical, the latter crossed. Metathoracic spiracle with two fringes of hairs, without obvious cover ('operculum').

Front tibia with 2 anterodorsal and 1 posteroventral setae, dorsal and anterodorsal preapical seta of subequal length; middle tibia with 1 anterodorsal, 2 posterodorsal and 1 ventral seta, hind tibia with 2 anterodorsal, 2 posterodorsal, 2 anteroventral and 3 dorsal preapical setae (anterodorsal, dorsal and posterodorsal). Tarsi, especially front and middle tarsi, elongated, metatarsus as long as next two segments, claws and pulvilli short.

Wing cell r_{4+5} open. Bend of vein R_{4+5} gently curved. Crossvein dm-cu slightly closer to crossvein r-m than to bend. Distance from dm-cu to bend 1.6 times as long as postangular section of vein M. Base of vein R_{4+5} dorsally with 2–3 setulae, ventrally with 1–2 setulae. Setulae on first section of costa only slightly larger and less dense than on other sections of the costa, costal spine distinct but small.

Abdomen with excavation of syntergite 1+2 reaching halfway the segment. Syntergite 1+2 and tergite 3 without discal setae, marginal setae hair-like, tergites 4 and 5 with a row of marginal setae. Discal seta on tergite 4 small and indistinct, on tergite 5 larger.

Differential diagnosis

See key below.

Oplisa oldenbergi Herting, 1961
(Figs. 15, 16)

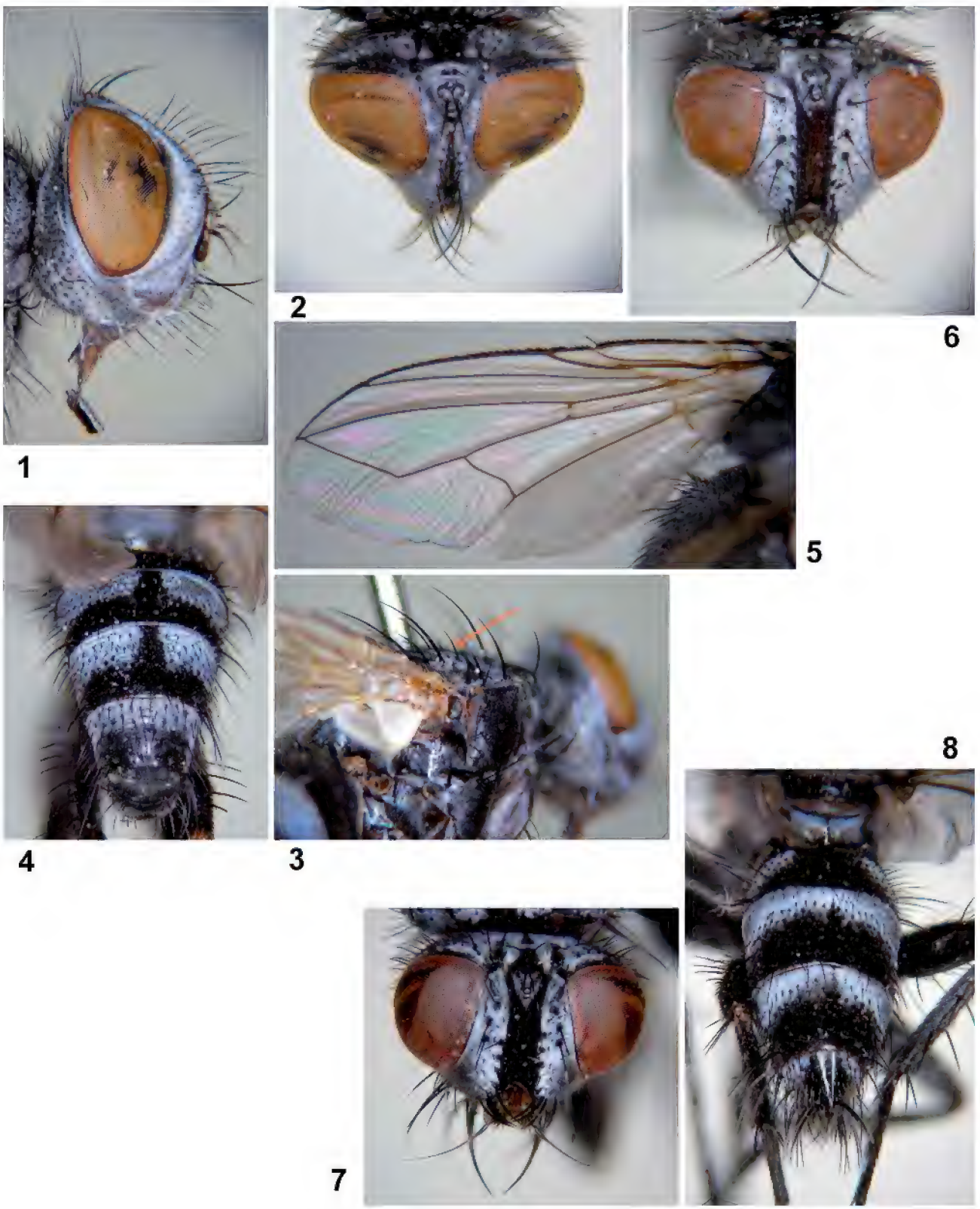
Material

Turkey: 3 ♂♂, Province Rize, Sivrikaya S Rize (Doğu Karadeniz Dağları), 40°42'23.0N 40°37'36.6E, 1200 m, 22.VII.2002, leg. C. Lange & J. Ziegler (CJZ). – **Bulgaria**: 1 ♂, 1 ♀, E Bulgaria, Sv. [=Sveta] Vlas, near Nesebar, ca. 20 m, 8.–31.V.1998, Malaise trap, leg. C. v. Achterberg, R. de Vries, P. V. Atanassova; 1 ♂, same locality and collectors, 1.–31.VIII.1998, 1 ♀, same locality and collectors, 1.–30.VI.1998 (all CTZ).

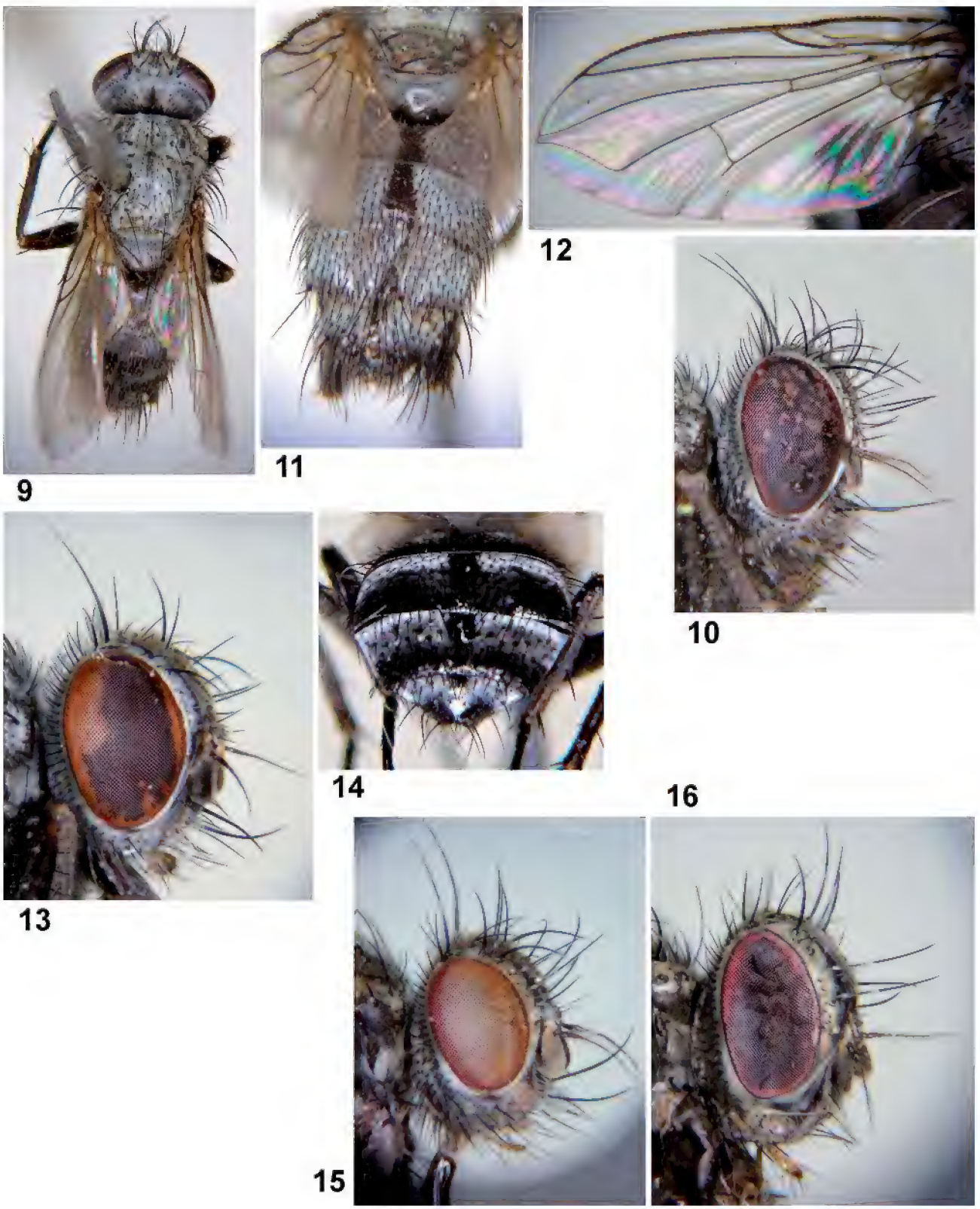
Previously recorded from Mehadia in Romania (holotype, Herting 1961), the Pieniny mountains in Poland (Draber-Mońko 1989) and several localities in Ukraine (Verves 2005).

Diagnosis

Arista plumose. Ocellar setae proclinate. Parafacial broad, twice as broad as arista at base (Figs. 15, 16). Basal



Figs. 1–8. Rhinophoridae. – **1–6**. *Phyto anatolica* n. sp., ♂ holotype (1–4), ♀ paratype (5–6). **7–8**. *Stevenia kugleri*, ♂. **1**. Head, lateral view. **2**. Head, dorsal view. **3**. Thorax, slightly oblique lateral view (the red arrow indicates the first posterior supra-alar seta). **4**. Abdomen, dorsal view. **5**. Wing. **6**. Head, dorsal view. **7**. Head, dorsal view. **8**. Abdomen, dorsal view.



Figs. 9–16. *Oplisa* spp. – **9–12**. *O. hertingi* n. sp. ♂ holotype. **13–14**. *O. nudiseta* n. sp. ♀ holotype. **15–16**. *O. oldenbergi*. **9**. Habitus, dorsal view. **10**. Head, lateral view. **11**. Abdomen, dorsal view. **12**. Wing. **13**. Head, lateral view. **14**. Abdomen, dorsal view. **15**. ♂ head, lateral view. **16**. ♀ head, lateral view.

proclinate orbital seta small, so at first glance only 1 pair of distinct proclinate orbital setae present. Abdominal tergites with broad black hind margins and a central black vitta. No central marginal setae on syntergite 1+2 (HERTING 1961 mentions small marginal setae in the type), a row of marginal setae on the other tergites. Smaller discal setae present on tergites 4 and 5. Setulae on basal section of costa as long as on apical section, costal spine about twice as long. Base of vein R_{4+5} with 2 or more strong setulae and several smaller ones.

J. ZIEGLER (pers. comm.) has compared males in his collection with the type of *O. oldenbergi* (SDEI) and found them to be conspecific. Both have a relatively broad parafacial.

Oplisa cf. *oldenbergi*

Material

Turkey: 1 ♀, S Turkey, Kurşunlu waterfall [north of Antalya], 28.IX.2007, leg. N. VIKHREV (CTZ).

Diagnostics

The specimen is very similar to *O. oldenbergi*, but the parafacial is narrow as in *O. hertingi*. Moreover, the palpus is unusually short. Given the paucity of the material, I mention this form without describing it formally.

Oplisa pollinosa Kugler, 1978

KUGLER's original description does not mention some striking characteristics in the colouration, e. g. the legs. Therefore, I give a short redescription, based on the two paratypes from Israel which are present in SMNS (1 ♂, Hula, 6.VII.1977, leg. A. FREIDBERG; 1 ♀, Haifa, 16.V.1971, leg. J. KUGLER). My description differs in some details from the original one, e. g. in the presence of discal setae on tergite 4.

Redescription

Ocellar setae proclinate. Parafacial very narrow, as in *O. hertingi* n. sp. Third antennal segment 2.5 times as long as second, second segment and basal third of third segment brightly orange, remainder of third segment dark brown. Arista long plumose, hairs on upper side of arista longer. Inner vertical seta very strong, outer vertical seta 0.5 times inner vertical. Male with one strong proclinate orbital seta. Palpus yellow.

Thoracic dorsum with 0+1 acrostichal setae (presutural indistinct), 2+3 dorsocentral setae, 0+2 intra-alar setae, 3 katepisternal setae, first posterior supra-alar seta smaller than notopleural seta but still relatively strong. Scutellum completely grey, with 2 pairs of strong marginal setae (crossed apicals and subbasals), subbasal setae weaker. Front tibia with 2 anterodorsal setae, middle tibia with 2 anterodorsal setae, the upper one smaller (only 1 in type according to KUGLER 1978).

Tergites largely grey with very narrow dark hind margins, with a narrow dark central vitta. All tergites with strong lateromarginal and laterodiscal setae, syntergites 1+2 otherwise without setae, tergite 3 with marginal setae, tergite 4 with a pair of discal setae and a row of marginal setae, tergite 5 with a row of both.

Legs largely orange, femora darkened in middle, tarsi dark. Pulvilli short in both sexes.

Wings with short setulae on costa, one very strong seta on base of vein R_{4+5}. Bend of vein M close to wing margin, distance from bend to crossvein dm-cu nearly twice as long as postangular section of vein M.

Key to the species of *Oplisa* subgenus *Anoplisa*

The following key separates the subgenera of *Oplisa* and the known species of the subgenus *Anoplisa* from the western Palaearctic:

1 Costa with large setulae between base and end of subcosta (about 1–2 times as long as diameter of costa in this section) and with a strong costal spine (as long as 1–3 times crossvein r-m). Ocellar setae either reclinate, lateroclinate or proclinate. ..... Subgenus *Oplisa* s. str. (see HERTING 1961, KUGLER 1978)

– Costa without large setulae at base (about as long as diameter of costa); costal spine, if differentiated, at most as long as 1.5 times crossvein r-m. Ocellar setae proclinate. ..... Subgenus *Anoplisa* **2**

2 Abdominal tergites 3–5 dark on about posterior half (Fig. 14). Front tibia with 2 anterodorsal setae..... **3**

– Abdominal tergites without dark hind margins or dark hind margins at most as wide as one-fourth of the segments (Fig. 11). Front tibia with 1 or 2 anterodorsal setae. **4**

3 Arista strongly plumose (Figs. 15, 16). Parafacial (seen in profile) wider than arista at base. Tergite 3 with strong and erect marginal setae. Minimum distance of bend of vein M to wing margin at least half length of postangular section of M..... ***O. oldenbergi***

– Arista virtually bare (Fig. 13). Parafacial narrow, about as wide as arista at base. Tergite 3 with adpressed and indistinct marginal setae, hardly differentiated from surrounding hairs. Minimum distance of bend of vein M to wing margin one-third length of postangular section of M. ..... ***O. nudiseta* n. sp.**

4 Wing with 1 very strong setula (and occasionally 1–3 distinctly shorter ones) at base of vein R_{4+5} (resembling *Oplisa* s. str.). Front tibia with 2 anterodorsal setae. Scutellum entirely black. Tibiae and femora mostly reddish or yellowish. Tergite 4 with discal setae, tergite 3 with marginal setae. ..... ***O. pollinosa***

– Wing with 2–4 setulae of normal size at base of vein R_{4+5} (as in other *Anoplisa*). Front tibia with 1 anterodorsal seta. Scutellum with a yellowish apex. Legs black. Tergite 4 without discal setae, tergite 3 without (♂) or with very indistinct (♀) marginal setae. ..... ***O. hertingi* n. sp.**

4 Genus *Stevenia* Robineau-Desvoidy, 1830

Stevenia kugleri Herting, 1961
(Figs. 7, 8)

Material

Turkey: 3 ♂♂, S Turkey, 'Silion ruins' [=Sillyon ruins east of Antalya], 2.X.2007, leg. N. Vikhrev (CTZ).

Previously recorded from Israel by Herting (1961) and Kugler (1978).

Diagnosis

Male with an indistinct posteroventral ctenidium on middle femur; claws and pulvilli short; fronto-orbital plate with at least one pair, often two pairs of proclinate orbital setae. Frons at the narrowest point slightly narrower than an eye. General colouration dark, with rather strong bands of pruinescence on abdominal tergites, also on syntergite 1+2 and tergite 5; wings strongly infuscated along veins, especially anteriorly.

The species is most close to *S. triangulata* (Loew, 1847), but it is much darker and the vertex is narrower. The presence of 2 pairs of proclinate orbital setae in the male is unusual in *Stevenia*, otherwise found in *S. flaviventris* Kugler, 1978.

5 References

Cerretti, P. & Pape, T. (2007): Two new species of European *Stevenia* (Diptera: Rhinophoridae) and a key to the Palaearctic species. – Zootaxa **1624**: 31–41.

Cerretti, P. & Pape, T. (2009): Phylogeny and re-definition of the genus *Melanophora* (Diptera: Rhinophoridae), with description of a new species from Sardinia. – Zootaxa **2318**: 552–565.

Crosskey, R. W. (1977): A review of the Rhinophoridae (Diptera) and a revision of the Afrotropical species. – Bulletin of the British Museum (Natural History), Entomology series **36** (1): 66 pp.

Draber-Mońko, A. (1989): Rhinophoridae. – In: Klucze do oznaczania owadów Polski, XXVIII Muchówki – Diptera, **73c**, 60 pp; Warszawa (Państwowe Wydawnictwo Naukowe).

Herting, B. (1961): Rhinophoridae. – In: Lindner, E. (ed.): Die Fliegen der palaearktischen Region **64e**: 36 pp; Stuttgart (Schweizerbart).

Herting, B. (1993): Family Rhinophoridae. – In: Soós, Á. & Papp, L. (eds.): Catalogue of Palaearctic Diptera **13**: 102–117; Budapest (Hungarian Natural History Museum).

Kugler, J. (1978): The Rhinophoridae (Diptera) of Israel. – Israel Journal of Entomology **12**: 65–106.

Oosterbroek, P., Jong, H. de & Sijstermans, L. (2005): De Europese families van muggen en vliegen (Diptera), 205 pp; Utrecht (KNNV).

Pape, T. (1986): A phylogenetic analysis of the woodlouse-flies (Diptera, Rhinophoridae). – Tijdschrift voor Entomologie **129**: 15–34.

Pape, T. (1998): 3.53 Family Rhinophoridae. – In: Papp, L. & Darvas, B. (eds.): Contribution to a Manual of Palaearctic Diptera (with special reference to flies of economic importance) **3**: 679–689; Budapest (Science Herald).

Pape, T. & Arnaud, P. H. Jr. (2001): *Bezzimyia* – a genus of native New World Rhinophoridae (Insecta, Diptera). – Zoologica Scripta **30**: 257–297.

Pape, T. & Kurahashi, H. (1994): First records of Rhinophoridae (Insecta: Diptera) from Japan. – Japanese Journal of Entomology **62**: 475–481.

Rognes, K. (2010): *Alvamaja chlorometallica* gen. n., sp. n. from Europe – the first metallic Rhinophoridae (Diptera). – Tijdschrift voor Entomologie **153**: 3–13.

Verves, Yu. G. (2005): A check-list of the Ukrainian Rhinophoridae (Diptera). – Entomological Problems **35**: 69–74.

Zeegers, T. (2008): Order Diptera, family Rhinophoridae. – In: Harten, A. van (ed.): Arthropod fauna of the United Arab Emirates **1**: 732–740; Abu Dhabi (Dar Al Ummah).

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The identity of *Blondelia pinivorae* (Ratzeburg) (Diptera: Tachinidae), a parasitoid of processionary moths (Lepidoptera: Thaumetopoeidae)

Christer Bergström & Cezary Bystrowski

Abstract

Blondelia pinivorae (Ratzeburg, 1844), an apparently exclusive parasitoid of larvae of processionary moths, is removed from synonymy with *B. nigripes* (Fallén, 1810), a common species which belongs to the most polyphagous tachinid flies. A full redescription is given for *B. pinivorae*, and a key to the European species of *Blondelia* is presented. Lectotypes are designated for *Musca pinivorae* and *Tachina nigripes*. *Blondelia piniariae* (Hartig, 1838) is treated as a synonym of *B. nigripes*.

K e y w o r d s : Tachinidae, *Blondelia*, Thaumetopoeidae, lectotypes, key, new synonymy.

Zusammenfassung

Blondelia pinivorae (Ratzeburg, 1844), ein wahrscheinlich spezifischer Parasitoid von Prozessionsspinner-Raupen, der zuvor mit *B. nigripes* (Fallén, 1810) vermengt war, wird als gültige Art nachgewiesen. *B. pinivorae* wird detailliert wiederbeschrieben und ein Schlüssel für die europäischen *Blondelia*-Arten wird erstellt. Für *Musca pinivorae* and *Tachina nigripes* werden Lectotypen designiert. *Blondelia piniariae* (Hartig, 1838) wird als Synonym von *B. nigripes* aufgefasst.

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1 Introduction

The genus *Blondelia* Robineau-Desvoidy, 1830 constitutes a morphologically and biologically homogeneous group within the large and multiform tribe Blondeliini (Herting 1984; Shima 1979, 1984; Wood 1985; Tschorsnig & Herting 1994). This tribe includes small to medium sized flies recorded as parasitoids on a wide range of host species including larvae and adults of beetles, larvae of Lepidoptera, sawflies and crane-flies, and also nymphs and adults of grasshoppers. Most females are known to deposit incubated or unincubated eggs directly onto the integument of their hosts, but females of *Blondelia*, *Vibrissina* and *Compsilura* possess a piercing ovipositor that enables an injection of larvae directly into the host. All *Blondelia* species are, as far as known, parasitoids of larvae of Lepidoptera or Hymenoptera (Symphyta).

At least the Nearctic and Palaearctic *Blondelia* share the following features: Eyes practically bare. Fronto-orbital plate with 2–3 (rarely 4 in male) reclinate inner orbital setae (anteriormost seta smallest); without proclinate outer orbital setae in male. Ocellar setae strong and proclinate. Facial ridge with a few recumbent setulae on lower half or less. First flagellomere in male about as long as or slightly longer than that of the female. Parafacial bare. Prosternum normally with setulae (specimens with bare prosternum extremely rare). Proepisternum bare except for 1–2 seta(e) and some hairs at lower margin. Postpronotum with 4 (rarely 5) setae; 3 basal setae arranged in a straight or slightly curved row. Katepisternum with 3–4 setae (specimens with only 2 setae extremely rare). First postsutural supra-alar seta shorter and weaker than notopleural setae. Scutellum with 3 pairs of strong setae: basal and lateral pair shorter than subapical pair; apical pair undifferentiated, short and hair-like except for *B. inclusa* where the apical scutellar bristles are rather strong, sometimes almost as long as the scutellum. Wing with second costal sector bare ventrally; cell r_{4+5} ending well before wing tip; open or closed, rarely with a very short petiole. Anterodorsal apical seta of the fore tibia longer than the dorsal apical seta. Mid tibia with 2–5 strong anterodorsal setae. Abdomen with mid-dorsal depression on syntergite 1+2 extending back to hind margin; tergite 2 with 1–2 pairs of median marginal setae. ♀♀: Ventral margins of tergite 3 and

4 raised, forming a sharp keel, their posterior edges with small and stout spines. Sternite 7 modified into a hook-like piercer (HERTING 1957, SHIMA 1984, WOOD 1985).

The genus *Blondelia* (sensu WOOD 1985) is mainly represented in the Holarctic region, but occurs in all biogeographic regions except the Australasian one (O'HARA 2008). Up to the present six species of *Blondelia* are recorded from the Palaearctic region, i. e. *B. angusticornis* Herting, 1987, *B. siamensis* (Baranov, 1938) [= *B. breviceps* Shima, 1984] (O'HARA et al. 2009), *B. vexillaria* (Villeneuve, 1922), *B. inclusa* (Hartig, 1838), *B. nigripes* (Fallén, 1810), and *B. piniariae* (Hartig, 1838) (HERTING 1987, HERTING & DELY-DRASKOVITS 1993), of which the latter three are found in Europe (TSCHORSNIG et al. 2004). One eastern Palaearctic species, *B. siamensis* (Baranov, 1938), is also found in the north eastern fringe of the Oriental region (SHIMA 1997), and one species, *B. vexillaria* (Villeneuve, 1922), is restricted to North Africa (Tunisia). Only one species, *B. tibialis* Mesnil, 1962, is known from the Afrotropical region (MESNIL 1962). Six species are distributed in America north of Mexico (O'HARA & WOOD 2004), and ten species are cited from the Neotropical region (GUIMARÃES 1971).

In this paper *Blondelia pinivorae* (Ratzeburg, 1844), earlier placed in synonymy with *B. nigripes* (Fallén, 1810), is shown to represent a valid species while *B. piniariae* is proposed as a new synonym of *B. nigripes*. Detailed information is given on the types of *Musca pinivorae* Ratzeburg, *Tachina nigripes* Fallén and *Tachina piniariae* Hartig.

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2 Material and Methods

This study was based on our examinations of the following material representing three Palaearctic species of *Blondelia*:

B. pinivorae (Ratzeburg, 1844): A syntype (now lectotype) from Germany [ZSM], 133 specimens from Sweden [CB, MZLU, NMSZ], Turkey [MTPPD, CBYS] and Europe [NHMW] (see material listed in chapter 3).

B. nigripes (Fallén, 1810): 386 specimens from Sweden including 3 syntypes [CB, CRE, MZLU, NHRS], Denmark [CB], Finland [MZH], the Netherlands [CTZ] Poland [CBYS], and Russia [MZH]). In addition 169 specimens previously assigned to *B. piniariae* (Hartig, 1838): 8 syntypes probably from Germany [ZSM], 161 specimens from Germany, Poland and the Czech Republic, all reared from *Bupalus piniaria* [SMNS, CBYS]. Among the reared material are numerous specimens from Böhmen [= Bohemia] and Mähren [= Moravia], reared by F. A. WACHTL.

B. inclusa (Hartig, 1838): 14 specimens from Sweden [CRE, MZLU], Poland [CBYS] and Russia [MZH].

The dissection of the male and female terminalia was performed following the method described by O'HARA (2002).

External morphological images (Figs. 1–6) were taken with a Nikon D2X digital camera mounted to a bellow and a macro-optical tube. Images of the terminalia (Figs. 7–18) were taken with a digital camera Nikon Coolpix 8400 mounted on a stereoscopic microscope Nikon SZS 1500. To create a completely focused image, a series of images of each object was taken at different focal planes. Using HeliconFocus, a program that combines the focused areas from the several partially focused images, creates one completely focused image.

Data on the labels of type material are listed using the following symbols: / = end of a line; // = end of a label (from top to bottom on the same pin).

The dissected male and female terminalia are preserved in glycerol in a small plastic tube pinned together with the specimen.

Terminology of external morphology and terminalia as well as measurements and ratios of head follow TSCHORSNIG (1985) and TSCHORSNIG & RICHTER (1998).

Acronyms of depositories

CB	Private collection of C. BERGSTRÖM, Uppsala, Sweden
CBYS	Private collection of C. BYSTROWSKI, Warsaw, Poland
CRE	Private collection of ROGER ENGELMARK, Umeå, Sweden
CTZ	Private collection of THEO ZEEGERS, Soest, the Netherlands
MTPPD	The Museum of Tokat Plant Protection Department, Tokat, Turkey (K. KARA)
MZH	Zoological Museum, Division of Entomology, Helsinki, Finland (P. VILKAMAA)
MZLU	Museum of Zoology, Lund University, Lund, Sweden (R. DANIELSSON)
NHMW	Naturhistorisches Museum, Vienna, Austria (P. SEHNAL)
NHRS	Swedish Museum of Natural History (= Naturhistoriska Riksmuseet), Stockholm, Sweden (B. VIKLUND)
NMSZ	National Museums of Scotland, Edinburgh, U. K. (D. ROBERTSON)
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany (H.-P. TSCHORSNIG)
ZSM	Zoologische Staatssammlung, Munich, Germany (M. KOTRBA)

3 *Blondelia pinivorae* (Ratzeburg, 1844)

Material

Lectotype (♀) of *Musca pinivorae* Ratzeburg, 1844 from Germany (locality unknown). RATZEBURG's collection is supposed to be lost (see below), but a female that most probably emanates from his collection is still available in HARTIG's collection in ZSM. This female was examined by MIK & WACHTL

(1895: 242) who mentioned that it bears an original label of RATZEBURG. MIK and WACHTL undoubtedly regarded the studied female as type, but as they did not state that in their publication, it is no fixation of a lectotype in the sense of Art. 74.6. ICZN. We also assume, in accordance with Art. 72.4.1.1. ICZN that the specimen of *B. pinivorae* from the HARTIG collection in ZSM belongs to the type series of RATZEBURG. The full labelling is as follows: "262 // [printed] aus dem Kasten: / Tachiniden-Typen / von HARTIG und RATZEBURG // [handwritten label of RATZEBURG] *pinivorae* / Rtzbg. // [printed and handwritten red label] Type von RATZEBG: / *Lydella* R.-D. / *pinivorae* Rtzbg. // [handwritten] *Blondelia* / *nigripes* Fall. / B. HERTING det. ♀ // [printed] *Blondelia* ♀ / *pinivorae* (Ratzeburg) / det. C. BERGSTRÖM 2008". The specimen is in fairly good condition except for the head that is devoid of numerous setae. This specimen of RATZEBURG is hereby designated as lectotype.

Additional specimens: **Europe** (country unknown, probably Central Europe): 1 ♂ "[handwritten] *Masicera*? / (*Chaetotachina*) // *Cn. pinivora* / 20/5 // 86 // *Blondelia* ♂ / *pinivorae* (Ratzeburg) / det. BERGSTRÖM 2007" [NHMW]. – 1 ♀ "[handwritten] *Cn. pinivora* 13/5 // [printed] *machairopsis* / det. B. B. // *Blondelia* ♀ / *pinivorae* (Ratzeburg) / det. BERGSTRÖM 2007" [NHMW]. — **Sweden:** 1 ♂, 1 ♀, Öland, Böda, 20.VIII.1956, em. 21.IX.1956, ex *Thaumetopoea pinivora*, leg. E. THAM [MZLU]. – 2 ♀♀ [one of it misidentified as ♂ in FORD et al. 2000], Öland, Böda, Byerum, 31.VII.1993, em. VI.1994, ex *Thaumetopoea pinivora*, leg. CLAES ELIASSON [NMSZ]. – 2 ♀♀, Öland, Böda, VIII.1993, em. 20.VIII.1995, ex *Thaumetopoea pinivora*, leg. CLAES ELIASSON [NMSZ]. – 1 ♀, ex *Thaumetopoea pinivora*, leg. F. NORDSTRÖM [MZLU]. – 3 ♂♂, 5 ♀♀, Gotland, Sudret, em. V.–VI.2005, from pupae inside cocoons of *Thaumetopoea pinivora*, leg. STIG LARSSON [CB]. – 1 ♂, 1 ♀, Gotland, Vamlingbo parish, host cocoon collected from the ground in spring 2007, em. 28.V.2007, ex *Thaumetopoea pinivora*, leg. STIG LARSSON [CB]. – 15 ♂♂, 7 ♀♀ and 2 puparia, same data as before, but em. 29.V.–1.VI.2007 [CB, 1 ♂ SMNS]. – 2 ♂♂, 2 ♀♀, Gotland, Sundre parish, Hoburg, host cocoon collected from the ground in spring 2007, em. 28.V.2007, ex *Thaumetopoea pinivora*, leg. STIG LARSSON [CB]. – 1 ♀, same data as before, but em. 29.V.–1.VI.2007 [CB]. – 3 ♂♂, 2 ♀♀, Gotland, Sundre parish, Muskmyr, host larvae collected from *Pinus* 28.VII.2006, em. spring 2007, ex *Thaumetopoea pinivora*, leg. MIKAEL JOHANNESSON [CB]. – 28 ♂♂, 28 ♀♀, Gotland, Vamlingbo parish, Nore, collected with simple emergence traps or glue traps in an area infested with *Thaumetopoea pinivora*, VII.2009, leg. STIG LARSSON [CB]. — **Turkey**: 5 ♂♂, 5 ♀♀ [examined out of a total number of 42 ♂♂, 38 ♀♀], Isparta, 25.IV.2000, ex *Thaumetopoea ispartaensis*, leg. M. AVCI [4 ♂♂, 4 ♀♀ MTPPD; 1 ♂, 1 ♀ CB]. – 1 ♂, 14 ♀♀, Alacabel near Sydişehir, 1825 m, on *Euphorbia* plants [= "wilczomlecze"], locality [= "st."] 1, 23.VI.2009, leg. C. BYSTROWSKI [CBYS].

History of the use of the name *Musca pinivorae*

RATZEBURG (1844: 172–174) described eleven new tachinid species, of which today only *Ceromya flaviceps* is considered a valid species. Most of his collection, including the type specimens, is supposed to be destroyed during the Second World War (HERTING 1990, ZIEGLER 1998). However, as mentioned above, one presumable type specimen still exists in HARTIG's collection in ZSM. The original description of *Musca pinivorae* Ratzeburg (1844: 173–174) is – like many old descriptions – very insufficient, reading: "15. *M. Pinivorae* 5–5¼ ‴ lang, gestreckt. 2. Fühlgl. z. 3 = 1 : 2. Borste etwa ¼ verdickt. Sp. Quernerv fast grade. Gesicht, Stirn und Scheitel fast ganz schwarz; Taster dunkel; Hinterleib lang-kegelförmig, an der Seite des 2. u. 3. Ringes roth. Ausserordentlich borstig. Im Herbste von mir aus Raupen und Puppen der *Bombyx pinivora* gezogen".

The presence of lateral red spots on the abdominal tergites 3 and 4 only fits the male gender. This feature was also noted by the first revisers MIK & WACHTL (1895: 242): "RATZEBURG hat die oben reproducirte Beschreibung offenbar nach einem ♂ entworfen". The original description is, however, extremely scarce and as it is not explicitly stated that it refers to the male gender alone, it can therefore not be ruled out that RATZEBURG's type series also included females.

In fact MIK & WACHTL (l. c.) also found a female specimen of *Musca pinivorae* in HARTIG's collection: "sub Nr. 262 ein ♀ unter dem Namen *Tachina pinivorae* mit Originalzettel von RATZEBURG". They regarded the name as valid in the new combination *Dexodes pinivorae* Ratzeburg. In a comprehensive description they also presented features, e. g. width of parafacial at narrowest point compared to maximal width of face, that made it possible to distinguish *D. pinivorae* from their *D. piniariae*. *Dexodes* was replaced by *Lydella* in the Katalog der Paläarktischen Dipteren (BEZZI & STEIN 1907) where *Lydella nigripes* (= *Blondelia nigripes*) and *Lydella pinivorae* (= *B. pinivorae*) were treated as species propria while *L. piniariae* (= *B. piniariae*) was regarded as a synonym of *L. nigripes*. This opinion was unfortunately not followed by later authors. BAER (1921: 156–157) who also examined the specimens in HARTIG's collection, treated both *Lydella pinivorae* and *L. piniariae* as synonyms of *Lydella nigripes*. STEIN (1924: 96) mentions under *Ceromasia nigripes* (= *Blondelia nigripes*) two large males, with a body length of almost 12 mm and with brownish yellow palps and a single female standing in RATZEBURG's collection, all reared from *Thaumetopoea pinivora* and thus apparently representing syntypes that are lost today (see above). Furthermore he mentions a female of *Ceromasia piniariae* (measuring 8 mm) and a female of *C. pinivorae* (12 mm) standing in HARTIG's collection in Munich, apparently representing the two specimens illustrated in the paper of MIK & WACHTL (l. c.). In accordance with BAER (l. c.) he regarded all these specimens to represent a single species, i. e. *Ceromasia nigripes* (= *Blondelia nigripes*). HERTING & DELY-DRASKOVITS (1993) treated *B. pinivorae* as a synonym of *B. nigripes* while *B. piniariae* was listed as a valid species. *Musca pinivorae* herein revised is removed from synonymy with *Blondelia nigripes* (Fallén, 1810) and established as a valid species in the combination *Blondelia pinivorae* (Ratzeburg, 1844).

Redescription

Male:

Colouration and pruinosity: Head black with dense grey to white pruinosity, sometimes with a yellowish tinge; frontal vitta black. Face at mouth margin, lower anterior portion of parafacial, and genal groove reddish brown or brownish but usually well hidden by pruinosity. Antenna including arista black or brownish black. Palps black or brownish black. Thorax black, dorsally covered with a rather dense greyish white pruinosity; marked with 5 unpruinose dark longitudinal stripes; middle stripe absent in front of the suture; the three median stripes behind the suture mostly confluent in the anterior region. Wing veins as well as microtrichia infuscated (dark with a brownish tinge). Mesothoracic spiracles lined with black hairs; flap of metathoracic spiracle covered with black hairs. Tegula and basicosta black. Calypter yellowish white, the fringe slightly more reddish yellow. Halter slightly infuscate at base, stem brownish yellow, knob at least partly reddish. Legs black. Abdomen (Fig. 5) black with a pair of reddish brown spots laterally on tergites 3 and 4 and narrow spots occasionally visible laterally on tergite 2. Syntergite 1+2 unpruinose except for a very narrow posterior band of greyish white pruinosity. Tergites 3–5 with basal bands of greyish white pruinosity dorsally covering anterior 3/4–4/5, 2/3–3/4 and 3/5–3/4 respectively, towards hind margins replaced by a thin and brownish pruinosity; interrupted in the middle by a more or less continuous black longitudinal stripe.

Head (Figs. 1, 2): Eyes practically bare, but at higher magnification with scattered microscopic pale hairs as long as 1–1.5 eye facets. Frons about as long as face. Frons at its narrowest point 0.24–0.30 times (n = 15) as wide as head in dorsal view. Interfrontal area at midpoint 1.0–1.2 times as wide as the corresponding parafrontal area. Ocellar setae proclinate, usually as strong as strongest frontal setae; postocellar setae well developed. Inner vertical seta 0.6–0.7 of eye-height; outer vertical setae undifferentiated, rarely somewhat exceeding the length of the adjacent postocular setae, weaker and also shorter than postocellar setae. A row of 7–9 crossed frontal setae descending to about apex of pedicel or slightly beneath; 2–4 strong inner reclinate orbital setae. Parafrontal outside the frontal setae with numerous long erect hairs and frequently also with some fairly strong setae that can form a parallel row of small frontal setae. Parafacial in frontal view slightly narrowing below, nearly always bare, i. e. no parafrontal hairs descending below the level of the lowest frontal seta; at its narrowest point (actual width) 0.28–0.31 times (n = 15) as wide as the maximum width of the face (including the facial ridges). Facial ridge with 1–2 strong supravibrissal setae and numerous setulae in lower ⅓–½. 2–4 strong subvibrissal setae. Back of head covered with pale hairs, behind the postocular row with numerous short black setae arranged in one or two somewhat irregular rows. Flagellomere 1 relatively short, in lateral view about 3 times as long as wide and evenly curved at apex, 1.76–2.20 times (n = 14) as long as pedicel. Arista thickened in its basal 1/5–1/4, gradually tapering towards the middle. Sclerotized part of prementum about twice as long as wide. Palpus not or only slightly widened apically, about as long as first flagellomere, its tip densely covered by black hairs.

Thorax: Postpronotum with 4 (rarely 5) setae; 3 basal setae arranged in an almost straight line and 1 slightly weaker seta in front of the middle and inner basal setae. Scutum with 2 inner posthumeral setae, the foremost often weak, 1 outer posthumeral seta, 3 + 3 pairs of acrostical setae, 3 + 3 pairs of dorsocentral setae and 1 + 3 pairs of intra-alar setae. First postsutural supra-alar seta distinctly weaker than notopleural setae. Katepisternum with 3 setae. Katepimeron bare or with 1–2 small setulae at the anterior edge. Anepimeral seta weak, distinctly weaker than the lowest katepisternal seta. Scutellum with 3 pairs of strong setae along margin; basal pair of setae subequal to the lateral pair and about 0.8 times as long as the strong subapical pair; apical pair minute (hair like) not exceeding the size of the ground vestiture; dorsal surface of scutellum with 2(–3) + 4 erect discal setae, the strongest almost as long as the length of the scutellum.

Wing: Costal spine weakly developed, about twice as long as the surrounding costal setulae, normally distinctly shorter than cross-vein r-m; second costal section bare ventrally; combined fourth and fifth costal section 1.4–1.8 times as long as sixth costal section. Vein R_{4+5} dorsally with 2–4 setulae at base. Bend of vein M obtuse and normally without an appendage; apical section of vein M slightly concave, normally distinctly longer than section of M between crossvein dm-cu and bend; section of M between dm-cu and bend 0.9–1.4 times as long as distance between bend of vein M and margin of wing. Last section of vein CuA_1 at least as long as crossvein dm-cu.

Legs: Claws and pulvilli on fore legs about 1.2 times as long as tarsal segment 5, the latter 1.7–1.8 times as long as tarsal segment 4. Fore tibia with 2 posterior setae and a row of 6–8 short anterodorsal setae; preapical anterodorsal seta well developed, longer and stronger than the preapical dorsal seta. Mid tibia with 3–5 strong anterodorsal setae, accompanied by 1–4 sometimes very weak setulae, 2 posterior and 1 strong and 1–2 small ventral setae. Hind tibia with an irregular row of 12–14 anterodorsal setae including a stronger seta inserted at middle of row, 5–6 posterodorsal setae including a strong seta at level of strong anterodorsal seta, 3–4 anteroventral setae, and 2 preapical dorsal setae; preapical posteroventral seta undifferentiated.

Abdomen (Fig. 5): Ground vestiture partly recumbent dorsally on tergite 3, more erect in the dorsomedial region

(along the black longitudinal mid-stripe) and laterally, erect or semi-erect on tergites 4 and 5. Tergite 2 with 2–4 median and 1–(2) lateral marginal seta(e) on each side. Tergite 3 dorsally with 2–4 median and 2 lateral marginal setae on each side, with 2 (rarely 3) median discal and 0–1 lateral discal setae on each side. Tergite 4 with a complete row of 8–12 marginal setae, dorsomedially normally with 2–4 strong discal setae often mixed with some additional setulae, rarely with as many as 6 strong setae, but medial discal setae always well separated from 1–3 lateral discal setae. Tergite 5 with numerous discal setae, sometimes arranged in 2–3 more or less irregular rows, and with marginal setae at the tip.

Male terminalia (Figs. 7–9): Sternite 5 about as wide as long; basal plate long and strongly arched; anterior margin evenly rounded except for a small indentation at midpoint; posterior margin with a U-shaped incision, basally with a narrowing, reaching to about middle of that segment; maximal width of incision as wide as or slightly wider than the width of the posterior lobe at that point; posterior lobe on surface with numerous setulae of varying size, medioapical margin densely short-haired. Sternite 6 well developed, strongly asymmetrical. Tergite 6 rather weakly sclerotized, widely constricted at the middle or separated into two hemitergites, rarely with some weak hairs along inner posterior margin; spiracle 6 situated in membrane close to lower margin of segment 7 + 8. Segment 7 + 8 narrow, with numerous setulae; spiracle 7 above, in an almost dorsolateral position, close to the anterior margin of that segment. Epandrium in dorsal view approximately twice (1.8–2.0 times) as wide as long. Cerci robust, in lateral view widest at about middle with ventral margin almost straight in apical half, in dorsal view wide for a long distance and tapering shortly before apex, 3.7–4.0 times as long as wide at level of beginning of apical cleft; cleft about 0.25–0.30 times as long as basal suture. Surstylus distinctly shorter than cerci, in lateral view subrectangular, its tip evenly rounded with setulae in the dorsodistal portion, some of them noticeably long. Pregonite with 4–5 hairs in apical portion. Postgonite narrow, hook-like, with 2–3 sensorial hairs, membranous apically. Intermedium long and narrow. Basiphallus without basal projection; epiphallus distinctly sclerotized, inserted basally. Ventral plate of distiphallus densely covered with spinules; lateroventral lobes insignificantly developed.

Body length: 8.4–11.2 mm [10.9] (n = 17).

Female (differences to male):

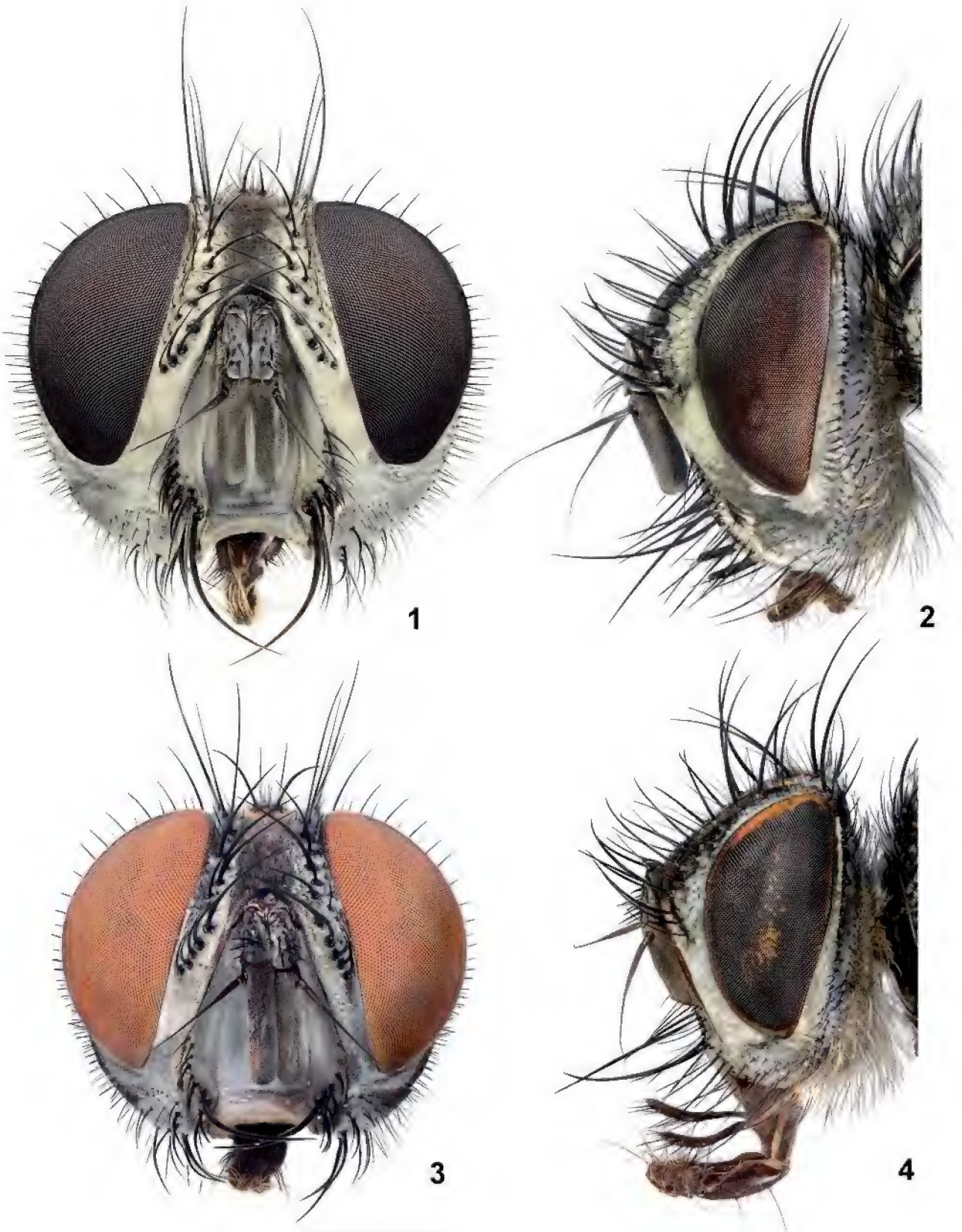
Frons at narrowest point 0.32–0.37 [0.36] times (n = 17) as wide as head in dorsal view. Interfrontal area at midpoint 0.6–0.7 times as wide as the corresponding parafrontal area. Parafrontal area with a row of [4]5–7 frontal setae; 2 outer proclinate orbital setae and 2 inner reclinate orbital setae (the posteriormost seta smaller and often slightly lateroclinate). Inner vertical seta about 0.8 of eye-height; outer vertical setae well developed, about half as long as inner vertical seta and also longer and stronger than postocellar setae. Parafacial at its narrowest point (actual width) 0.31–0.38 [0.34] times (n = 17) as wide as the maximum width of the face (including the facial ridges). First flagellomere 1.62–1.97 [1.72] times (n = 14) as long as pedicel. Legs: Claws and pulvilli on fore legs about as long as tarsal segment 5, the latter 1.5–1.6 times as long as tarsal segment 4. Abdomen: Ventral margins of tergites 3 and 4 raised, forming a sharp ventral keel with 5–8 rather long but still stout spines at the posterior edges of tergites 3 and 4.

Ground vestiture dorsally on tergites 3 and 4 recumbent also in the dorsomedial region, partly erect on tergite 5. Tergite 2 with 2 median and 1 lateral marginal seta(e); tergite 3 with 2 median and 0–1 lateral marginal setae, 2(rarely 3) median discal setae and 0–1 [0] lateral discal setae; tergite 4 with a complete row of 8–10 [10] marginal setae, dorsomedially normally with 2 strong medial discal setae (rarely without) and 0–1 [0] lateral discal setae. Tergite 5 with fewer discal setae compared to male, arranged in two rows in the posterior ⅔ of that segment.

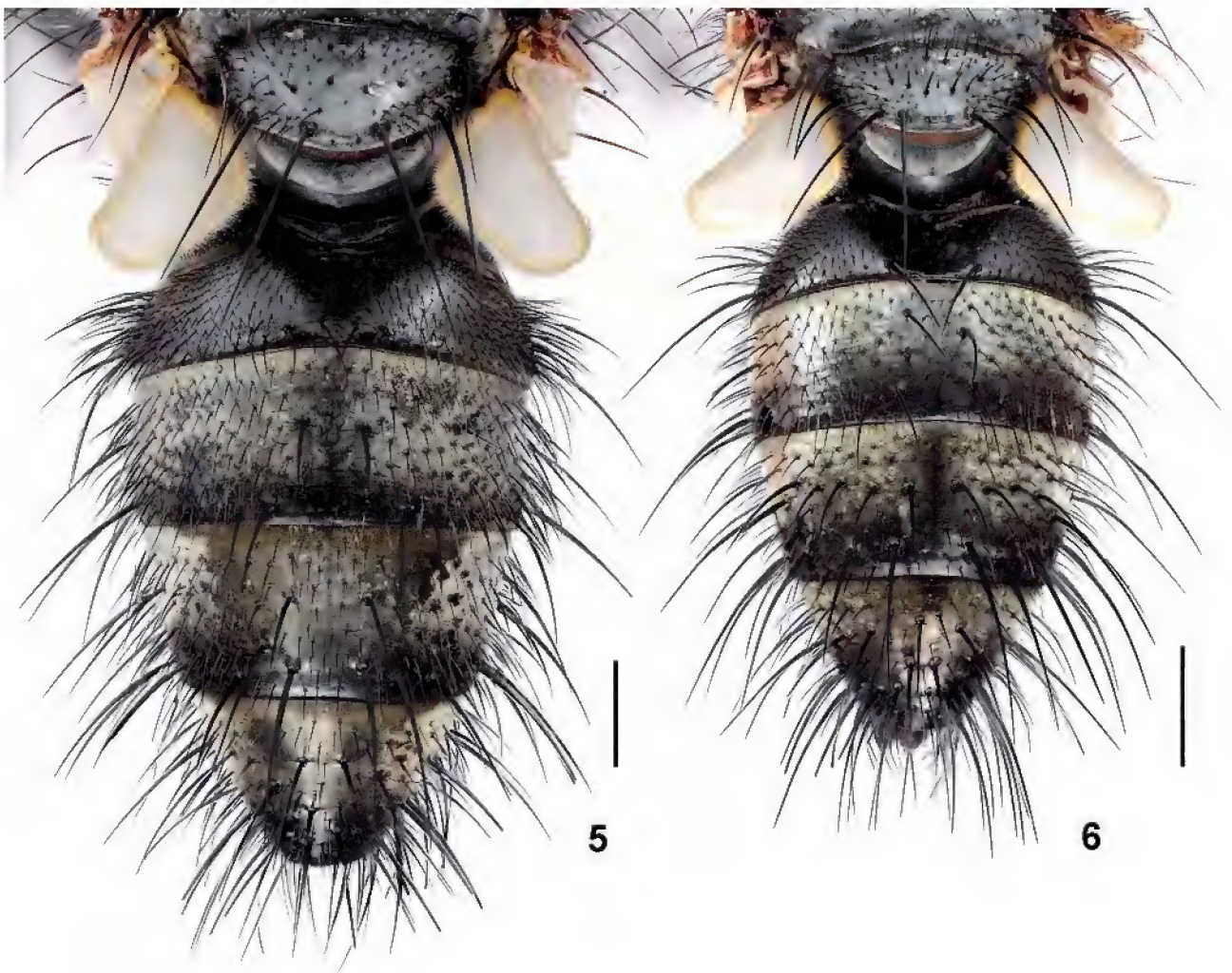
Female terminalia (Figs. 13, 17): Sternite 5 with posterior half triangular in caudal view, somewhat membranous along mid line, anterior half with a long and narrow invagination concealed below sternite 4. Tergite 6 short, entire, slightly constricted at middle, with numerous hairs along posterior margin. Sternite 6 in lateral view modified into a distinct downcurved hook, apex in caudal view about twice as long as wide at middle, anterior invagination fairly membranous with two sensorial pits (sensilla trichodea) at base. 6th and 7th spiracles in the membrane between tergite 6 and sternite 6. Tergite 7 divided into two hemitergites. Sternite 7 with posterior part modified into a downcurved hook-like piercer, basal lateral part differentiated into a wide and mostly stoutly sclerotized bridge fused to tergite 7, a minute anterior invagination with two sensorial pits. Tergite 8 divided into two small hemitergites, subtriangular in basal half and narrowly extended posteriorly. Sternite 8 long and narrow (sometimes apparently short due to the membranous apical part). Epiproct present. Hypoproct densely covered by microtrichia, lingulae long and wide in dorsal view, extending parallel to the narrow extension of tergite 8 and approaching its subtriangular area. Cerci short.

Distribution

B. pinivorae is mainly recorded from Sweden (Öland and Gotland), but as the species is also known from Germany (type material) and Turkey, it is most probably widespread in Europe.



Figs. 1–4. *Blondelia* spp., ♂, head, frontal (1, 3) and lateral (2, 4) view. – **1**, **2**. *B. pinivorae*. **3**, **4**. *B. nigripes*. – Scale: 1 mm.



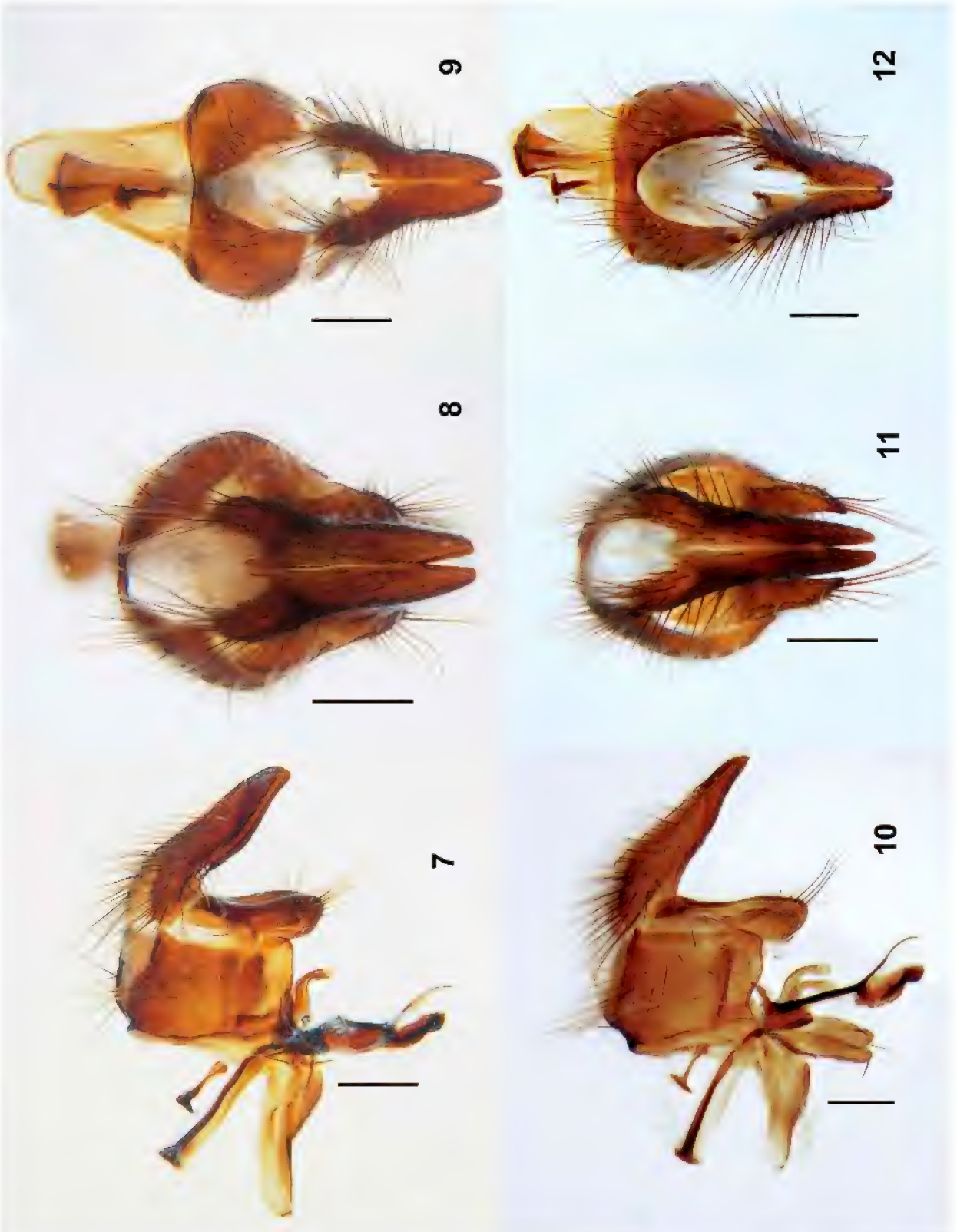
Figs. 5–6. *Blondelia* spp., ♂, abdomen, dorsal view. **5**. *B. pinivorae*. **6**. *B. nigripes*. – Scales: 1 mm.

Biology

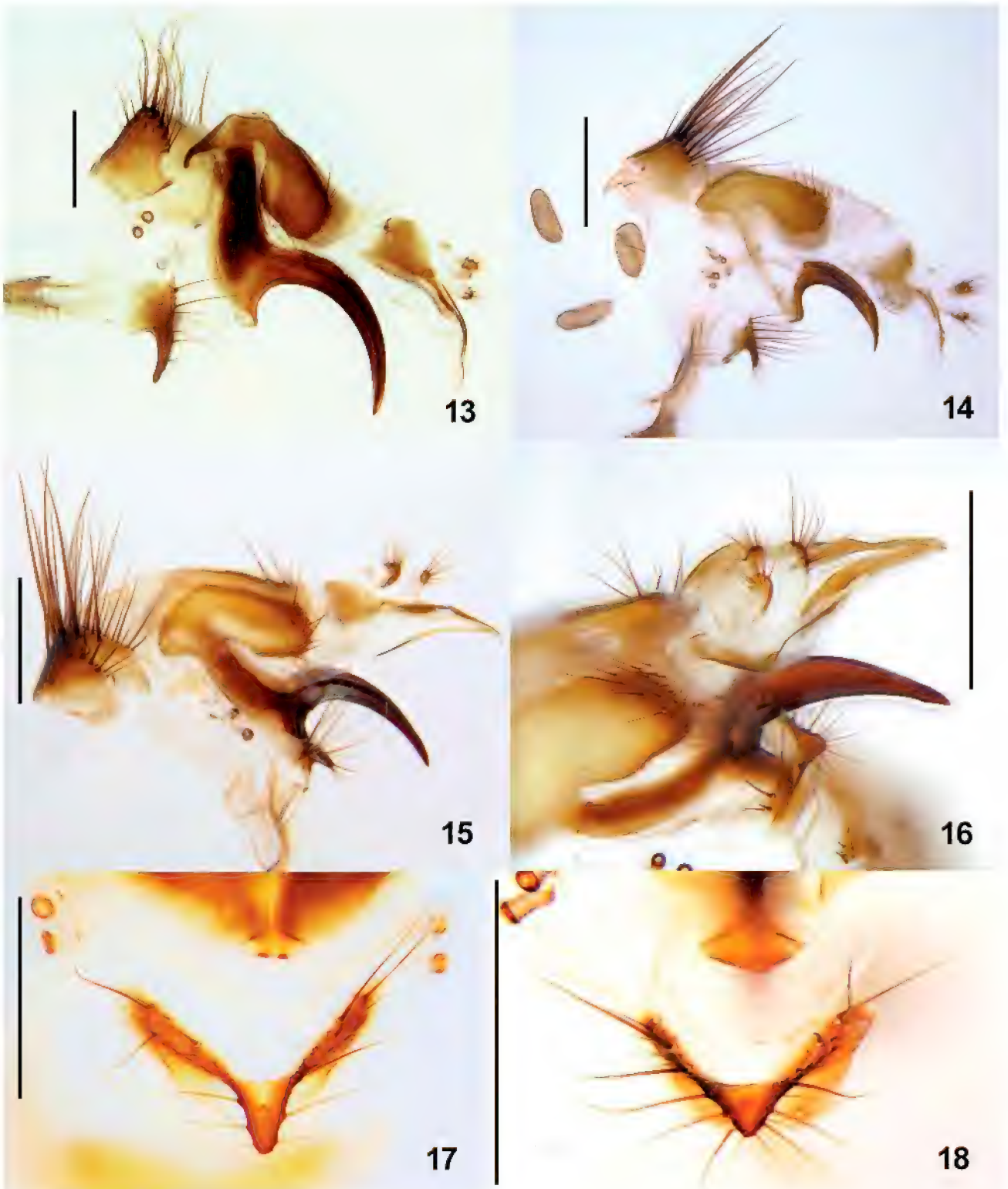
Blondelia pinivorae is probably, based on the available information, a principally univoltine and almost monophagous parasitoid of larvae of processionary moths (Lepidoptera: Thaumetopoeidae). However, it cannot be ruled out that it at least occasionally needs an alternate host to fulfil its life cycle. Flight period in Sweden normally from late May to end of July, but specimens reared from cocoons occasionally emerge from late August to late September.

A total of 99 Swedish specimens of *B. pinivorae* have been examined in this study: 43 specimens were reared from the northern pine processionary moth *Thaumetopoea pinivora* (Treitschke, 1834) and 56 specimens were collected with simple emergence traps or glue traps from localities infested by this host (56). Most specimens originate from a rearing experiment in Gotland (Larsson 2006), but a few are also from Öland (Ford et al. 2000, as *B. nigripes*). The Gotland population of *T. pinivora* has a two-year development with parallel cohorts (year classes). The host larvae feed from April to end of July, which indicates that flies emerging from one cohort will parasitize larvae of the parallel cohort. Cohorts with high larval densities only occur in even years and are followed by a relatively large population of *B. pinivorae* in uneven years (Larsson 2006).

One or two (rarely three) full-grown tachinid larvae come out from each host (5th instar larva, prepupa or pupa). The pupariation takes place inside the host cocoon, or in its close vicinity. The most probable scenario is that the tachinid hibernates in its puparial state inside the cocoon close together with the dead host pupa (in the ground), but this has not been shown in Larsson's study. The adult flies emerge under natural conditions from end of May to mid



Figs. 7–12. *Blondelia* spp., ♂, hypopygium in lateral (7, 10), caudal (8, 11) and dorsal (9, 12) view. – **7–9**. *B. pinivorae*. **10–12**. *B. nigripes*. – Scales: 0.25 mm.



Figs. 13–18. *Blondelia* spp., ♀, terminalia in lateral (13–15) and oblique dorsal view (16), sternite 6 in caudal view (17, 18). – **13**, **17**. *B. pinivorae*. **14–16, 18**. *B. nigripes*. – Scales: 0.5 mm.

July the following year. However, if the Swedish population of *B. pinivorae* is monophagous (restricted to *T. pinivora*), it is not easy to explain the occurrence of newly emerged flies in autumn (August – September). One possibility is that they originate from perpetual host larvae whose development has been influenced by an abnormal rearing temperature.

We have also examined ten Turkish specimens reared from the cedar processionary moth *Thaumetopoea* [= *Traumatocampa*] *ispartaensis* Doğanlar & Avcı, 2001, published as *Blondelia nigripes* by Avcı & Kara (2002). This material turned out to be *B. pinivorae*, as well as the two specimens in NHMW reared from *T. pinivora* (published by Herting 1960 as *B. nigripes*). Baer's (1921) record of *B. nigripes* from *T. pinivora* refers to the original material of *B. pinivorae* of Ratzeburg (1844). So it is obvious, that *B. pinivorae* represents the only species of *Blondelia* from those two processionary moths.

The winter pine processionary moth *Thaumetopoea pityocampa* (Denis & Schiffermüller, 1775) is a commonly reared host which is primarily attacked by *Phryxe caudata*, but frequently also by *Compsilura concinnata*, and more rarely by *Exorista segregata* and *E. larvarum* (e. g. Biliotti 1956, 1958; Démolin 1970; Kara & Tschorsnig 2002; López-Sebastián et al. 2007; Cerretti & Tschorsnig 2010). The first author has also examined an extensive material reared from *T. pityocampa* kindly sent to him from Andrea Battisti (University of Padova). This material, apart from numerous specimens of *P. caudata*, also included many specimens of *C. concinnata* and also a single specimen of *E. larvarum* (from Sardinia). There is only a single literature record of *Blondelia nigripes* from *T. pityocampa* (Herting 1960). Without a study of the specimen(s), it cannot be decided if it really refers to *B. nigripes* or to *B. pinivorae*, but *Blondelia* is surely of negligible importance as parasitoid of *T. pityocampa*.

The oak processionary moth *Thaumetopoea processionea* (Linnaeus, 1758) is rarely recorded as a host for *Blondelia nigripes* (Dowden 1933, Zeegers 1997). The first author has dissected the single male specimen from the Zeegers material and it is actually representing *B. nigripes*, although the genitalia are slightly aberrant. However, other tachinid species which are often reared in large numbers from *T. processionea*, especially *Carcelia iliaca* and *Pales processioneae* (Tschorsnig 1996, Cerretti & Tschorsnig 2010), indicate that *Blondelia* is an uncommon parasitoid for this host.

4 Key to the European species of *Blondelia*

Blondelia pinivorae is very similar to *B. nigripes* in outer morphology and was therefore not recognized as a separate species in the available keys. However, it is – although the body size is widely overlapping – normally a distinctly larger species. Overlapping are also the extent of the abdominal pruinosity, the width of the frons in dorsal view, and the width of the first flagellomere in lateral view, but these features may nevertheless be useful in certain cases and are therefore included in the following key, which is modified from Tschorsnig & Herting (1994):

1 Palpus yellow. Scutellum with long and crossed apical setae. First flagellomere in ♂ 2.8–3.8, in ♀ 1.9–2.8 times as long as pedicel. Tergites 3 and 4 with bands of pruinosity in anterior 1/5–2/5. ..... ***B. inclusa***

– Palpus black to brownish yellow. Scutellum without or with only hair-like apical setae. First flagellomere in ♂1.76–2.50, in ♀ 1.43–1.97 times as long as pedicel. Tergites 3 and 4 with bands of pruinosity in anterior 3/5–5/6. ..... **2**

2 Body size 8.4–11.2 mm. Parafacial in frontal view slightly narrowing below; actual width at narrowest point in male 0.28–0.31, in female 0.31–0.38 times as wide as maximal width of face (including the facial ridge) (Fig. 1). First flagellomere in lateral view narrower than actual width of parafacial at middle (Fig. 2). Wing veins and microtrichia strongly infuscated (not visible in sun bleached specimens). Frons in ♂ at its narrowest point 0.24–0.30 times as wide as head in dorsal view, in ♀ 0.32–0.37 times. Abdominal pruinosity covering the anterior 3/4–5/6 of tergite 3, 2/3–3/4 of tergite 4, and 3/5–2/3 of tergite 5 (Fig. 5). – ♂: Tergite 3 with 2–4 median and 2 lateral marginal setae on each side, 2 (rarely 3) median discal setae; tergite 4 normally with 2–4 strong medial discal setae mixed with some additional setulae but always well separated from 1–3 lateral discal setae (Fig. 5). Terminalia: Epandrium in dorsal view 1.8–2.0 times as wide as long (Fig. 9); cerci robust, in lateral view with ventral margin almost straight in apical half (Fig. 7), in dorsal view wide over a long distance (tapering shortly before apex), 3.7–4.0 times as long as wide at level of beginning of apical cleft (Fig. 8); lateroventral lobes of distiphallus vaguely expanded in the medioventral region (Fig. 7). – ♀: Tergite 3 with 2 median and 0–1 lateral marginal setae, 2 median and 0–1 [0] lateral discal setae; tergite 4 dorsomedially with 0–2 strong medial and 0–1 [0] lateral discal setae; tergite 5 dorsally with 2 medial setae separated from 1–2 seta on each side. Terminalia: Sternite 6 in lateral view with a long hook-like ventral projection, in caudal view with apex about twice as long as wide at middle; sternite 7 long and strong, anteriorly with a shallow ventral incurvature (Figs. 13, 17)..... ***B. pinivorae***

– Body size 5.3–9.6 mm. Parafacial in frontal view distinctly narrowing below; actual width at narrowest point in male 0.18–0.26, in female 0.22–0.28 times as wide as maximal width of face (Fig. 3). First flagellomere normally as wide as or wider than actual width of parafacial at middle (Fig. 4). Wing veins and microtrichia yellowish or light brown. Frons slightly narrower, in male at its narrowest point 0.21–0.28 times as wide as head in dorsal view, in female 0.29–0.34 times. Abdominal pruinosity slightly less developed, covering the anterior 3/5–3/4 of tergites 3 and 4, and 1/2–3/5 of tergite 5 (Fig. 6). – ♂: Tergite 3 with at least 4 median and 2 lateral marginal setae on each side (sometimes forming a complete row), 2–4 (rarely 6) median discal setae; tergite 4 usually with a complete row of strong discal setae, sometimes with a second row (Fig. 6). Terminalia: Epandrium in dorsal view 1.4–1.6 times as wide as long (Fig. 12); cerci more slender, in lateral view with ventral margin somewhat incurved in apical half (Fig. 10), in dorsal view wide over a shorter distance (tapering well before apex), 5.0–5.5 times as long as wide at level of beginning of apical cleft (Fig. 11);

lateroventral lobes of distiphallus markedly expanded in the medioventral region (Fig. 10). – ♀: Tergite 3 with 2 median and 1–2 lateral marginal setae, and 2 median and 1 (sometimes weak) lateral discal setae; tergite 4 occasionally with a complete row of strong discal setae but then the row mostly consisting of 2–4 strong medial setae, some erect mediolateral setulae and 2–3 lateral discal setae of different size; tergite 5 dorsally with 10–12 equally sized discal setae forming a complete row. Terminalia: Sternite 6 in lateral view with a short projection, in caudal view with apex about as long as wide at middle; sternite 7 weaker, anteriorly with a deeper ventral incurvature (Figs. 14–16, 18). .....***B. nigripes***

5 Notes on some types of *Blondelia*

Tachina nigripes Fallen, 1810
[Fallén 1810: 270]

Type material: One syntype (♀) is available in the Fallén collection in NHRS, drawer 13 (1) and two syntypes (♀♀) are available in the Diptera Scandinaviae Collection in MZLU, drawer 20 (10). The original description (partly in Swedish) mentions only the female. The male gender was included later by Fallén (1820: 13). The type locality is apparently Kiviks Esperöd, Mellby parish, Scania, Sweden, as indicated by Zetterstedt (1844: 1059) "Hab. in Scandinavia, 12 Jul.–18 Sept., passim, in copula; scilicet in Scania in graminosis ad Esperöd in paræc. Mellby".

Three specimens, 2 ♀♀ and 1 ♂ were found under the name *Tachina nigripes* in the Fallén collection in NHRS: One female is mounted on an old strong pin and bears the following labels: "[handwritten faded ink label of Fallén] *T. nigri* / *pes* ♀ Fall. // Lectotype ♀ / *Tachina* / *nigripes* Fallén 1810 / des. Bergström 2008". I hereby designate this female from Sweden as lectotype of *Tachina nigripes* Fallén, 1810. It is in fairly good condition except for severe tears in both wings. The second female bears a Fallén label "*Tachina /nigripes /*♂ Fallén", i. e. it was originally misidentified as male. The third specimen, a correctly associated male, is unlabelled. The misidentified female and the male are not regarded as belonging to the syntype series.

The paralectotypes in MZLU are both mounted on old strong pins of Fallén type. The first female is labelled as follows: "[light blue tag (= Sweden, Skåne, Mellby, Esperöd near Kivik)] // [handwritten Zetterstedt label] *T. nigripes* / ♀ Mus. Fall. // Paralectotype ♀ / *Tachina nigripes* / Fallén 1810 / des. Bergström 2004". The second, originally unlabelled female is labelled: "Paralectotype ♀ / *Tachina nigripes* / Fallén 1810 / des. Bergström 2004".

According to Dowden (1933), who refers to an unpublished work of Sellers, two cotypes, a male and a female, of *nigripes* Fallén are present in Meigen's collection in NHMW. The male was designated by Sellers as the true *nigripes* while the female was referred to as *B. piniariae* Hartig. The type designation of Sellers (in Dowden l. c.) has not been accepted by recent entomologists, apparently because the original description explicitly refers to the female gender alone. Herting & Dely-Draskovits (1993) also referred to the type as a female from Sweden.

Identity: *Tachina nigripes* (Fallén, 1810) is a valid species of *Blondelia* Robineau-Desvoidy 1830 as currently understood.

Tachina piniariae Hartig, 1838
[Hartig 1838: 283]

Type material: Eight syntypes, which are available in the collection Hartig in ZSM have been examined by the first author. The original description of *Tachina piniariae* was based on an unspecified number of specimens representing both genders, all reared from *Bupalus piniaria* (Linnaeus, 1758) (as *Geometra piniariae*) and *Abraxas grossulariata* (Linnaeus, 1758) (as *Geometra grossulariata*). Type locality: probably Germany.

These syntypes are labelled as follows (measurements made by the first author are given in square brackets at the end of each type); four of the eight specimens were originally labelled as types:

♂, with puparium; 210 // [printed] aus dem Kasten: / Tachiniden-Typen / von Hartig und Ratzeburg // [printed and handwritten red label] Type von Hartig / *Lydella* R.-D. / *piniariae* Htg // [handwritten Hartig label with a black curled/coiled rim] *piniariae* / n. // [handwritten and printed label with a black frame] *Lydella* 210/212 / *nigripes* Fall. / Det. Sellers // [handwritten] *Blondelia* ♂ / *nigripes* Fall. / B. Herting det. '79 / od *piniariae* Htg. / nicht trennbar. [frons/head width = 0.26, actual width of parafacial at narrowest point (pafc w) / maximal width of facial (fc w) = 0.21].

♂, with puparium and remains of host pupa; 211 // [printed] aus dem Kasten: / Tachiniden-Typen / von Hartig und Ratzeburg // [printed and handwritten red label] Type von / Hartig // [handwritten Hartig label with a black curled/coiled rim] *piniariae* / n. // *Lydella* 209/211 / *piniariae* Hrtg. / Det. Sellers // [handwritten] *Blondelia* ♂ / *nigripes* Fall. / od *piniariae* Htg. / det. B. Herting, '79. [frons/head = 0.27, pafc w/fc w = 0.21].

♂, with puparium and host pupa; 212 // [printed] aus dem Kasten: / Tachiniden-Typen / von Hartig und Ratzeburg // [printed and handwritten red label] Type von / Hartig // [handwritten Hartig label with a black curled/coiled rim] *piniariae* / n. // *Lydella* 210/212 / *nigripes* Fall. / Det. Sellers // [handwritten] *Blondelia* ♂ / *nigripes* Fall. / od *piniariae* Htg. / det. B. Herting, '79. [frons/head = 0.27, pafc w/fc w = 0.20].

♀, with puparium; 209 // [printed] aus dem Kasten: / Tachiniden-Typen / von Hartig und Ratzeburg // [printed and handwritten red label] Type von / Hartig // [handwritten Hartig label with a black curled/coiled rim] *piniariae* / n. // *Lydella* 209/211 / *piniariae* Hrtg. / Det. Sellers // [handwritten] *Blondelia* ♀ / *nigripes* Fall. / od *piniariae* Htg. / det. B. Herting, '79. [frons/head = 0.33, pafc w/fc w = 0.23].

♂; (green) 406 // [printed] aus dem Kasten: / Tachiniden-Typen / von Hartig und Ratzeburg // [handwritten Hartig label with a black curled/coiled rim] *piniariae* / n. // [handwritten] *Blondelia* ♂ / *nigripes* Fall. / od *piniariae* Htg. / det. B. Herting, '79. [frons/head = 0.25].

♀; (red) 499 // [printed] aus dem Kasten: / Tachiniden-Typen / von HARTIG und RATZEBURG // [handwritten HARTIG label with a black curled/coiled rim] *piniariae* / n. // [handwritten] *Blondelia* ♀ / *nigripes* Fall. / od *piniariae* Htg. / det. B. HERTING, '79. [frons/head = 0.30].

♀; [printed] aus dem Kasten: / Tachiniden-Typen / von HARTIG und RATZEBURG // [handwritten HARTIG label with a black curled/coiled rim] *piniariae* / n. // [handwritten] *Blondelia* ♀ / *nigripes* Fall. / od *piniariae* Htg. / det. B. HERTING, '79. [frons/head = 0.32].

♂, head missing, with puparium; (blue) 904 // [printed] aus dem Kasten: / Tachiniden-Typen / von HARTIG und RATZEBURG // [handwritten HARTIG label with a black curled/coiled rim] *piniariae* / n. // [handwritten] *Blondelia* ♂ / *nigripes* Fall. / od *piniariae* Htg. / det. B. HERTING, '79.

MIK & WACHTL (1895) treated *Dexodes piniariae* (Hartig) as a valid name although *Tachina nigripes* Fallén was regarded a valid senior synonym. This opinion was however not accepted by BEZZI & STEIN (1907), BAER (1921) and STEIN (1924) who treated *B. piniariae* as a synonym of *B. nigripes*. However, DOWDEN (1933) claimed that *B. nigripes* and *B. piniariae* represented two distinct species. This opinion was supported by rearing experiments showing that specimens reared from *Bupalus piniaria* (Geometridae) apparently have habits and life histories different from those reared from *Lymantria dispar* and *Euproctis chrysorrhoea* (Lymantriidae). For example, it was shown that under natural conditions larvae of *Bupalus piniaria* were parasitized by *B. piniariae* but not by *B. nigripes*. Furthermore, according to DOWDEN (l. c.), the two species could easily be distinguished by the relationship of the width of the frons at its narrowest point to the width of head at its widest part. This ratio in *B. nigripes* ranges from 0.224–0.245 in the males, and from 0.293–0.303 in females, while *B. piniariae* has an average range from 0.274–0.286 in the males, and from 0.324–0.333 in females. However, the results are not trustworthy because most specimens examined by us shows intermediate values between the limits presented by DOWDEN who refers to measurements performed by SELLERS. The confusion increased when the first author examined the eight syntypes available in HARTIG's collection in ZSM (see above). SELLERS who has examined the syntypes regarded them to represent two different species and it was later somehow assumed that the specimens that he determined to *B. piniariae* are reared from *Bupalus piniaria*. There is, however, no information available on the labels which would indicate which specimens are reared from *Bupalus piniaria* or *Abraxas grossulariata*. Furthermore EMDEN (1954) also found that the number of intermediates between DOWDEN's limits was far greater than the number falling within his groups and stated that there is insufficient morphological evidence for regarding *B. nigripes* and *B. piniariae* as separate species. However, because of the proposed differences in host-range he treated them as two biological races of the same species *B. nigripes*. MESNIL (1962: 758), who refers to EMDEN, understood *B. piniariae* as a subspecies of *B. nigripes*. HERTING (1984: 186) treated *B. piniariae* as ecologically different from *B. nigripes*, but morphologically indistinguishable.

We have examined numerous specimens of *B. nigripes* reared from various hosts, without finding morphological features which would separate them from specimens reared from *Bupalus piniaria*. The width of the frons at its narrowest point is surely not a stable character. Also the male and female terminalia, when considering a large number of specimens, show no distinct differences. DOWDEN surely could not really recognize *B. pinivorae* as a distinct species, and this fact makes it difficult to interpret some of the results presented in his paper.

We therefore, referring to the results presented above, advise that the name *B. piniariae* is treated in synonymy with *B. nigripes*. Nevertheless, we believe that the final decision on this question should be based on a careful molecular-genetic analysis.

6 References

AVCI, M. & KARA, K. (2002): Tachinidae parasitoids of *Traumatocampa ispartaensis* from Turkey. – Phytoparasitica **30**: 361–364.

BAER, W. (1921): Die Tachinen als Schmarotzer der schädlichen Insekten. Ihre Lebensweise, wirtschaftliche Bedeutung und systematische Kennzeichnung. – Zeitschrift für angewandte Entomologie **7**: 97–163.

BEZZI, M. & STEIN, P. (1907): Cyclorrapha Aschiza. Cyclorrapha Schizophora: Schizometopa. – In: BECKER, T., BEZZI, M., KERTÈSZ, K. & STEIN, P. (eds.): Katalog der paläarktischen Dipteren **3**: 828 pp.

BILIOTTI, E. (1956): Biologie de *Phryxe caudata* Rond. (Dipt. Larvaevoridae) parasite de la chenille processionaire du pin (*Thaumetopoea pityocampa* Schiff.). – Revue de Pathologie végétale et d'Entomologie agricole de France **35**: 50–65.

BILIOTTI, E. (1958): Les parasites et prédateurs de *Thaumetopoea pityocampa* Schiff. (Lepidoptera). – Entomophaga **3**: 23–34.

CERRETTI, P. & TSCHORSNIG, H.-P. (2010): Annotated host catalogue for the Tachinidae (Diptera) of Italy. – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **3**: 305–340.

DÉMOLIN, G. (1970): Programa ecológico internacional sobre la "processionaria del pino" *Thaumetopoea pityocampa* Schiff. – Boletín del Servicio de Plagas forestales **13**: 111–117.

DOWDEN, P. B. (1933): *Lydella nigripes* and *L. piniariae*, fly parasites of certain tree-defoliating caterpillars. – Journal of agricultural Research **46**: 963–995.

EMDEN, H. F. VAN (1954): On the status of *Blondelia nigripes* Fallén and *Blondelia piniariae* Hartig (Diptera: Tachinidae). – Proceedings of the royal entomological Society of London (Series B) **23**: 155–158.

FALLÉN, C. F. (1810): Försök att bestämma de i Sverige funne flugarter, som kunna föras till slägtet *Tachina*. – Kongliga svenska Vetenskaps Akadademiens Nya Handlingar (2) **31**: 253–287.

FALLÉN, C. F. (1820): Monographia Muscidum Sveciae. Part **2**, pp. 13–24; Lundae [= Lund] (Berling).

FORD, T. H., SHAW, M. R. & ROBERTSON, D. M. (2000): Further host records of some West Palaearctic Tachinidae (Diptera). – Entomologist's Record and Journal of Variation **112**: 25–36.

GUIMARÃES, J. H. (1971): Family Tachinidae (Larvaevoridae). – In: A catalogue of the Diptera of the Americas south of the United States **104**: 333 pp.; São Paulo (Museu de Zoologia Universidade de São Paulo).

HARTIG, T. (1838): Ueber die parasitischen Zweiflüger des Waldes. – Jahresberichte ueber die Fortschritte der Forstwissenschaft und forstlichen Naturkunde **1**: 275–306.

HERTING, B. (1957): Das weibliche Postabdomen der calyptraten Fliegen (Diptera) und sein Merkmalswert für die Systematik der Gruppe. – Zeitschrift für Morphologie und Ökologie der Tiere **45**: 429–461.

HERTING, B. (1960): Biologie der westpaläarktischen Raupenfliegen (Dipt., Tachinidae). – Monographien zur angewandten Entomologie **16**: 188 pp.

HERTING, B. (1984): Catalogue of Palearctic Tachinidae (Diptera). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **369**: 228 pp.

HERTING, B. (1987): Beiträge zur Kenntnis der paläarktischen Raupenfliegen (Dipt. Tachinidae), XVII. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **408**: 14 pp.

HERTING, B. (1990): Beiträge zur Kenntnis der paläarktischen Raupenfliegen (Dipt. Tachinidae), XVIII. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **455**: 5 pp.

HERTING, B. & DELY-DRASKOVITS, Á. (1993): Family Tachinidae. – In: SOÓS, Á. & PAPP, L. (eds.): Catalogue of Palaearctic Diptera, vol. **13**, Anthomyiidae–Tachinidae, pp. 118–624; Budapest (Hungarian Natural History Museum).

KARA, K. & TSCHORSNIG, H.-P. (2002): Host catalogue for the Turkish Tachinidae (Diptera). – Journal of applied Entomology **127**: 465–476.

LARSSON, S. (2006): Massuppträdande av tallprocessionsspinnaren *Thaumetopoea pinivora* på södra Gotland. – Entomologisk Tidskrift **127**: 1–7.

LÓPEZ-SEBASTIÁN, E., TSCHORSNIG, H.-P., PUJADE-VILLAR, J., GUARA, M. & SELFA, J. (2007): Sobre los parasitoides asociados a las fases de larva y pupa de la procesionaria del pino en cuatro bosques mediterráneos (España). – Boletín de Sanidad vegetal, Plagas **33**: 53–60.

MESNIL, L. P. (1962): Larvaevorinae (Tachininae). – In: LINDNER, E. (ed.): Die Fliegen der palaearktischen Region **64g**, pp. 705–800.

MIK, J. & WACHTL, F. A. (1895): Commentar zu den Arbeiten von HARTIG und RATZEBURG über Raupenfliegen (Tachiniden). Aufgrund einer Revision der HARTIG'schen Tachiniden-Sammlung. – Wiener entomologische Zeitung **14**: 213–250.

O'HARA, J. E. (2002): Revision of the Polideini (Tachinidae) of America north of Mexico – Studia dipterologica, Supplement **10**: 170 pp.

O'HARA, J. E. (2008): World genera of the Tachinidae (Diptera) and their regional occurrence. Version 4. http://www.nadsdiptera.org/Tach/Genera/Gentach_ver4.pdf.

O'HARA, J. E., SHIMA, H. & ZHANG, C. (2009): Annotated catalogue of the Tachinidae (Insecta: Diptera) of China. – Zootaxa **2190**: 1–236.

O'HARA, J. E. & WOOD, D. M. (2004): Catalogue of the Tachinidae (Diptera) of America north of Mexico. – Memoirs on Entomology, international **18**: IV + 410 pp.

RATZEBURG, J. T. C. (1844): Die Forst-Insecten oder Abbildung und Beschreibung der in den Wäldern Preussens und der Nachbarstaaten als schädlich oder nützlich bekannt gewordenen Insecten; in systematischer Folge u. mit besonderer Rücksicht auf d. Vertilgung der Schädlichen. 3. Die Ader-, Zwei-, Halb-, Netz- und Geradflügler, VIII + 314 pp.; Berlin (Nicolai).

SHIMA, H. (1979): Study on the tribe Blondeliini from Japan (Diptera: Tachinidae) I. – Kontyû **47**: 126–138.

SHIMA, H. (1984): Study on the tribe Blondeliini from Japan (Diptera, Tachinidae) V. The genera *Blondelia* Robineau-Desvoidy and *Compsilura* Bouché. – Kontyû **52**: 540–552.

SHIMA, H. (1997): Taxonomical notes on Oriental Tachinidae (Insecta, Diptera) I: Blondeliini. – Bulletin of the graduate School of social and cultural Studies, Kyushu University **3**: 169–186.

STEIN, P. (1924): Die verbreitetsten Tachiniden Mitteleuropas nach ihren Gattungen und Arten. – Archiv für Naturgeschichte (A) **90**: 1–271.

TSCHORSNIG, H.-P. (1985): Taxonomie forstlich wichtiger Parasiten: Untersuchungen zur Struktur des männlichen Postabdomens der Raupenfliegen (Diptera, Tachinidae). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **383**: 137 pp.

TSCHORSNIG, H.-P. (1996): Parasitoide aus dem Eichenprozessionsspinner *Thaumetopoea processionea* (Linnaeus) (Lepidoptera: Thaumetopoeidae). – Mitteilungen des entomologischen Vereins Stuttgart **36**: 105–107.

TSCHORSNIG, H.-P. & HERTING, B. (1994): Die Raupenfliegen (Diptera: Tachinidae) Mitteleuropas: Bestimmungstabellen und Angaben zur Verbreitung und Ökologie der einzelnen Arten. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **506**: 170 pp.

TSCHORSNIG, H.-P. & RICHTER, V. (1998): 3.54. Family Tachinidae. – In: PAPP, L. & DARVAS, B. (eds.): Contributions to a Manual of Palaearctic Diptera (with special reference to flies of economic importance). Vol. **3**. Higher Brachycera, pp. 691–827; Budapest (Science Herald).

TSCHORSNIG, H.-P., RICHTER, V. A., CERRETTI, P., ZEEGERS, T., BERGSTRÖM, C., VAŇHARA, J., VAN DE WEYER, G., BYSTROWSKI, C., RAPER, C., ZIEGLER, J. & HUBENOV, Z. (2004): Tachinidae. – In: Fauna Europaea, http://www.faunaeur.org (available online 16.XII.2004).

WOOD, D. M. (1985): A taxonomic conspectus of the Blondeliini of North and Central America and the West Indies (Diptera: Tachinidae). – Memoirs of the entomological Society of Canada **132**: 130 pp.

ZEEGERS, T. (1997): Sluipvliegen (Diptera: Tachinidae) van de Nederlandse eikenprocessierupsen. – Entomologische Berichten, Amsterdam **57**: 73–78.

ZETTERSTEDT, J. W. (1844): Diptera Scandinaviæ disposita et descripta **3**: 895–1280; Lundæ [= Lund] (Lundberg).

ZIEGLER, J. (1998): Raupenfliegen – seit RATZEBURG ein Forschungsthema in Eberswalde. Ein Bericht aus dem Deutschen Entomologischen Institut. – Eberswalder Jahrbuch für Heimat-, Kultur- und Naturgeschichte **1998/99**, pp. 273–281.

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A new species of *Istocheta* Rondani (Diptera: Tachinidae) from the Mercantour National Park, France

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Abstract

A new tachinid species (Diptera: Tachinidae) from the Mercantour National Park in southeastern France, *Istocheta incisor* **n. sp.**, is described. The new species is probably nearly related to *I. nyctia* Borisova-Zinov'eva, 1966 from the Russian Far East.

Keywords: Tachinidae, *Istocheta*, France, Mercantour National Park.

Zusammenfassung

Istocheta incisor **n. sp.**, eine neue Raupenfliege (Diptera: Tachinidae) aus dem Mercantour Nationalpark in Südost-Frankreich, wird beschrieben. Die neue Art ist wahrscheinlich nahe verwandt mit *I. nyctia* Borisova-Zinov'eva, 1966 aus dem Fernen Osten Russlands.

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1 Introduction

The species of *Istocheta* Rondani are externally often very similar, but they provide useful characters for distinction in the male and sometimes also in the female genitalia. The cerci of the males have peculiar appendages or extensions (compare figures in Borisova-Zinov'eva 1963, 1964, 1966b and Chao et al. 1998). Keys to species are provided by Borisova-Zinov'eva (1964, 1966b) and Chao et al. (1998). The numerous Palaearctic species are listed in the catalogue of Herting & Dely-Draskovits (1993), for additions see Richter (1995) and O'Hara et al. (2009).

The new species described in this paper is a result of a collecting travel into the Mercantour National Park during July 2009.

Acronyms of depositories

MNHN	Muséum National d'Histoire Naturelle, Paris, France
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany
ZMHB	Museum für Naturkunde, Humboldt Universität, Berlin, Germany

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2 Methods

Measurements follow Tschorsnig & Richter (1998).

The photos were taken with a Keyence digital microscope VHX-500 FD and a Leica DFC 480 digital camera on a Leica MZ16 APO microscope.

No special preparation in glycerine of male and female postabdomina were made because the features of diagnostic importance are well visible in dry condition, but as a result not all characters of the postabdomina can be described.

3 Description of *Istocheta incisor* n. sp.

Material

Holotype (♂): France, Alpes-de-Haute-Provence, Haute Ubaye, 0.4 km SE Maison Méane, 1800 m, 16.VII.2009, leg. H.-P. Tschorsnig (SMNS).

Paratypes: 1♂, 1♀, same data as holotype (SMNS, MNHN). – 1♀, same country, region, date and collector, 2 km NW Col de Larche, 1900 m (SMNS). – 1♀, same data as before, but 17.VII.2009 (ZMHB). – 1♀, same country, region and collector, 2.5 km NW Col de Larche, 1860 m, 17.VII.2009 (SMNS).

All localities are situated in the Mercantour National Park in southeastern France.

Etymology

Incisor, from (Lat.) incidere = to cut into. The name, a noun in apposition, was chosen because the fused female sternite/tergite 7 has the shape and most probably also the function of a cutter.

Description

Male [statements given within square brackets refer to the male paratype]:

Colouration and pruinescence: Body black. Gena and a narrow stripe of parafacial along facial ridge brown. Palpus yellow. Halter reddish. Tegula and basicosta black. Calypters white. Legs black. Epandrium reddish brown lateroventrally, surstyli and cerci brown, appendages of cerci yellow. Head and thorax covered with grey pruinescence. Scutum with two pairs of sharply delimited dark presutural longitudinal stripes, the median stripes about as wide as 1/5–1/4 of the distance between them. Abdomen dorsally and ventrally entirely covered with grey pruinescence, with dark reflecting pattern in lateral view and a very slightly darker hind margin of the tergites in caudal view.

Head (Fig. 1): Face 1.3 [1.4] times as long as frons. Eye densely covered with long hairs. Frons at its narrowest point 1.22 [1.15] times as wide as an eye in dorsal view. Inner vertical bristles 0.8 [0.9] times as long as eye height, parallel or slightly divergent; outer vertical bristles not or only very slightly differentiated from the setae of the postocular row. Postocular setae long, bent forwards. Ocellar bristles strong, pro- and lateroclinate. Frontal bristles descending to aristal base. Two or three reclinate upper orbital bristles present, stronger but otherwise hardly differentiated from the uppermost frontal bristles. Two proclinate orbital bristles present. Frons with several rows of setulae which descend on about upper anterior half of the parafacial. Parafacial at its narrowest point about 0.6 times as wide as horizontal diameter of eye. Facial ridge convex in profile, with stout, erect bristles on lower 2/3–4/5. Vibrissa arising at level of lower anterior facial margin; the latter strongly protruding from the face, but not visible in lateral view. Antennae widely recessed into the deep facial cavity. Third antennal segment 7 times as long as second antennal segment. Arista bare, thickened on about basal 2/3. Second aristomere as long as wide. Gena, when seen in profile, about 0.7 of vertical diameter of eye. Genal dilation strongly reduced. Back of head with pale hairs, and 2–3 irregular rows of black setae on upper third behind the postocular row. Prementum about 2.5 times as long as its diameter. Palpus well-developed, with numerous black setulae, thickened part at most as wide as half of prementum.

Thorax: Prosternum with 8–10 strong setulae along lateral margins. Proepisternum bare. Postpronotum with 3 bristles arranged in a more or less straight line. Scutum with 3 + 3 pairs of acrostichal bristles, 2 + 3 pairs of dorsocentral bristles, 0 + 3 intra-alar bristles. First postsutural supra-alar bristle shorter than notopleural bristles. Katepisternum with 3 bristles. Katepimeron bare. Anepimeral seta about twice as long as general anepimeral hairs. Scutellum with 4 pairs of bristles along its margin: basal and subapical bristles strong, lateral and apical bristles less strong, subequal in length; apical bristles horizontal, divergent [crossed]; distance between subapical bristles equal to distance between subapical and basal bristles; surface of scutellum with erect hairs and 1–2 pairs of preapical bristles. Anatergite with 1–2 very fine hairs [bare] below lower calypter.

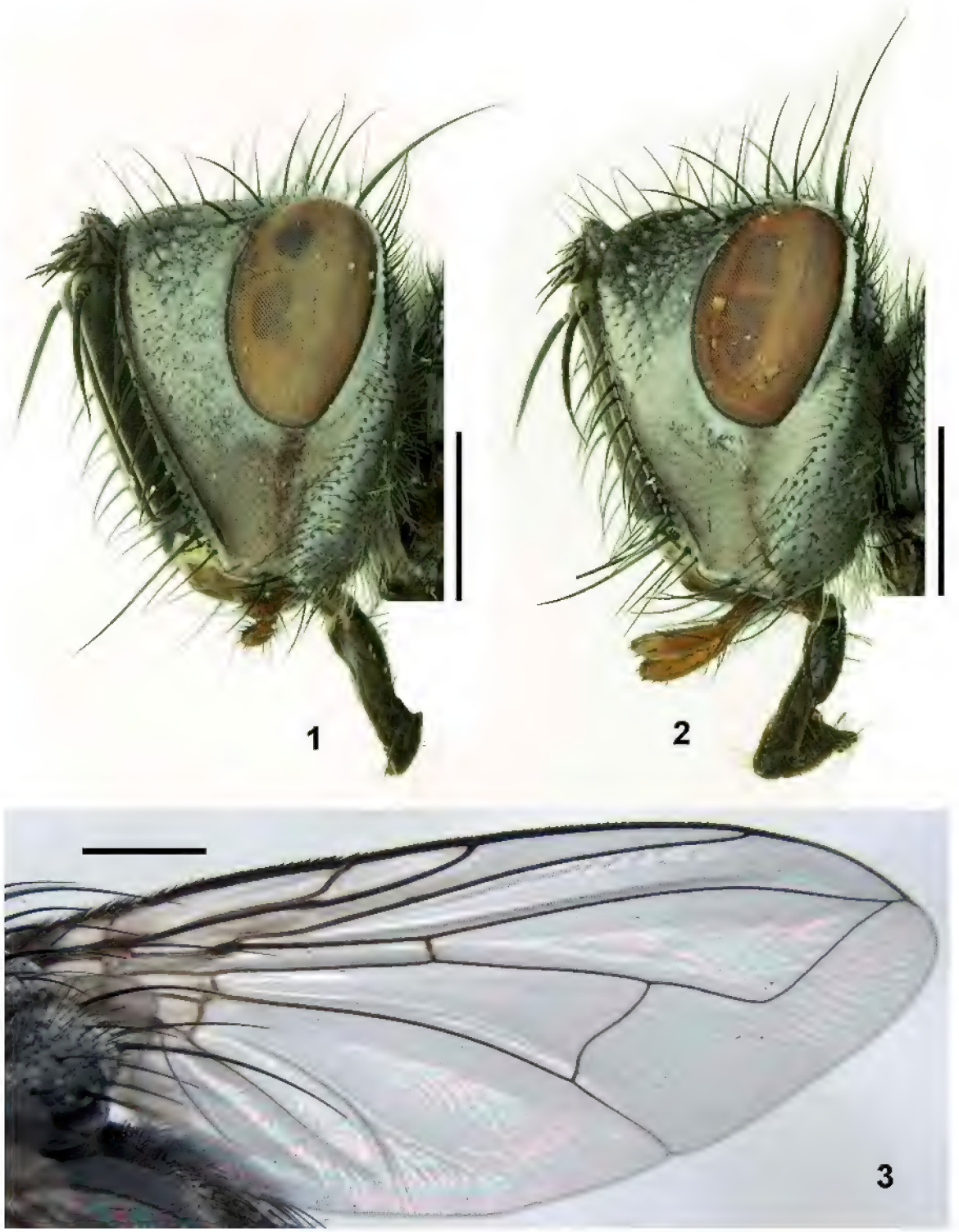
Wing (Fig. 3): Costal bristle nearly undifferentiated from the other costal setae. Second costal portion with fine hairs ventrally. Base of R_{4+5} with 2–3 setulae. R_1 and CuA_1 bare. Fourth costal section 2.8 [2.5] times as long as sixth costal section. Section of M between crossveins r-m and dm-cu 2.0 [2.2] times as long as section between dm-cu and bend of M. Bend of M obtuse. Petiole of wing cell r_{4+5} as long as 0.1 of section of M beyond bend.

Legs: Claws as long as fifth tarsal segment. Inner anterior surface of fore coxa bare. Fore tibia with a row of 4–5 short anterodorsal bristles and 2 posterior bristles; preapical anterodorsal bristle as long and strong as preapical dorsal bristle. Mid tibia with 1 anterodorsal bristle, 2 posterodorsal bristles, 1 strong ventral bristle. Hind tibia with a row of 8–9 anterodorsal bristles, 2–3 posterodorsal bristles, 2–3 anteroventral bristles, and 2 dorsal preapical setae; preapical posteroventral seta short, hair-like. Hind coxa bare on posterodorsal margin.

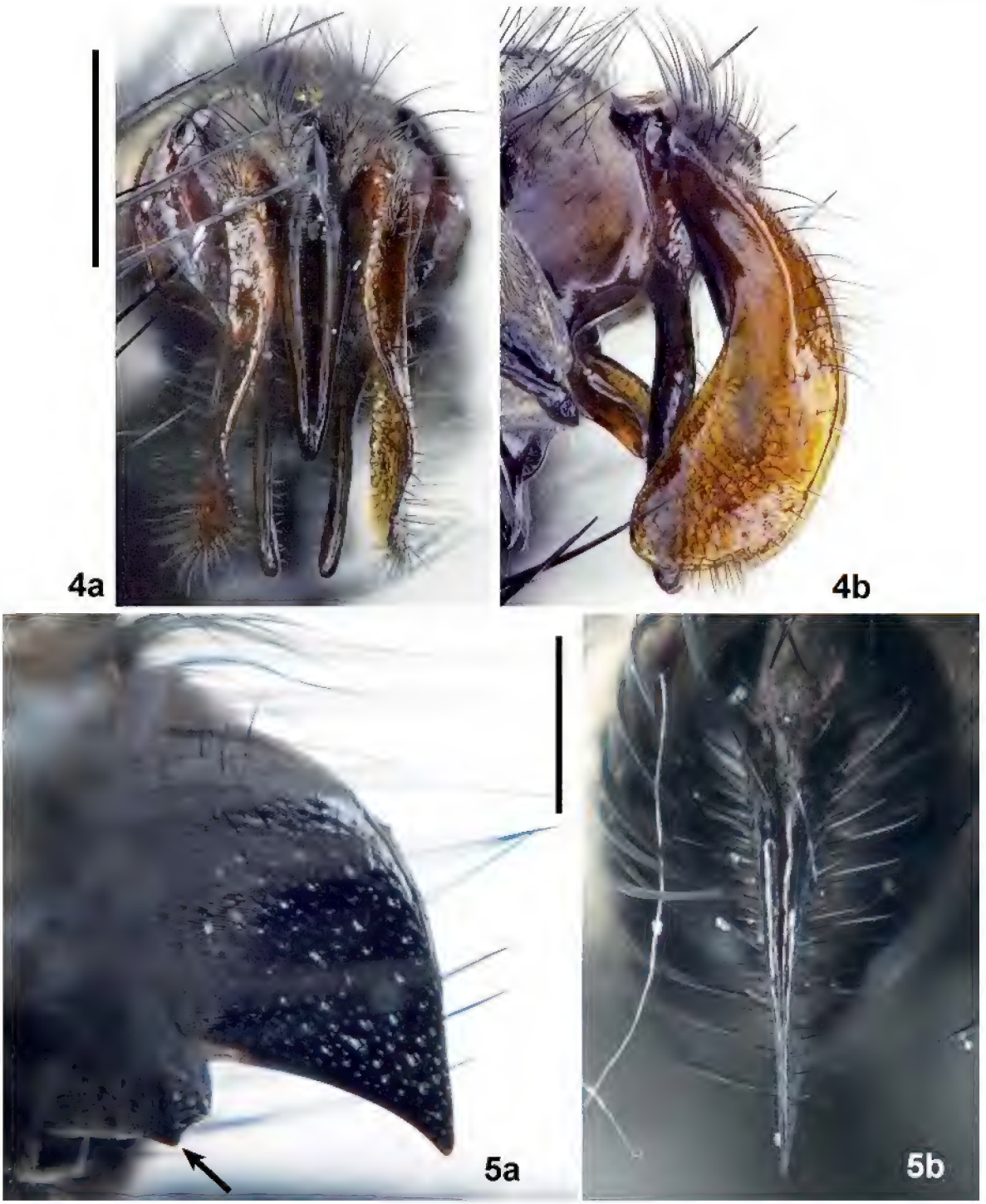
Abdomen: Middorsal depression on syntergite 1+2 confined to anterior 0.6–0.7 of that segment. Syntergite 1+2 with 1 pair of median marginal bristles and 2–3 pairs of lateral marginal bristles; tergite 3 with 1 pair of median marginal bristles, 2–3 pairs of lateral marginal bristles, and 1 pair of short median discal bristles; tergite 4 with a complete row of marginal bristles and 1 pair of discal bristles; tergite 5 with a row of semi-erect marginal bristles and several irregular discal bristles. Hairs on abdomen strong, recumbent dorsally, semi-erect and even stronger laterally.

Postabdomen (Fig. 4): Surstyli narrow, straight in lateral view, convergent in caudal view, reaching near the apical end of the appendages of the cerci. Cerci long and narrow, separated on 3/4 of its median length in dorsal view. Appendages of the cerci very large, continuously widened, not folded; free part of the appendages beyond the insertion point about 5 times as long as the basal part of the cerci (measured in dorsal view from the insertion point of the appendages to the very base of the cerci, not in the midline).

Body length 9.0 [8.7–9.7] mm.



Figs. 1–3. *Istocheta incisor* n. sp. – **1**. Head, holotype ♂. **2**. Head, ♀. **3**. Wing, ♀. – Scales: 1 mm.



Figs. 4–5. *Istocheta incisor* n. sp., paratype ♂ (4) and ♀ (5) terminalia. – **4**. Epandrium, cerci and surstyli in caudal (a) and lateral (b) views. **5**. Sternite 6 and sternite/tergite 7 in lateral (a) and caudal (b) views; the arrow indicates the short process of sternite 6. – Scales: 0.5 mm.

Female, differing from male as follows:

Basicosta dark brown to black. Abdominal pruinescence more dense than in male; in lateral view with dark reflecting pattern and a dark midline. Hairs on eye shorter (1/2–2/3 of male). Frons at its narrowest point 1.30–1.46 times as wide as an eye in dorsal view. Third antennal segment 5.4–6.3 times as long as second antennal segment. Back of head with 1–3 irregular rows of black setae on upper third. Thickened part of palpus about as wide as 2/3 of prementum (Fig. 2). Rarely an additional shorter presutural dorsocentral bristle present, anterior to the foremost of the two strong bristles. Katepimeron bare or with 1–4 hairs. Anatergite with a group of 3–5 fine hairs below lower calypter. Fourth costal section 3.0–3.3 times as long as sixth costal section. Section of M between crossveins r-m and dm-cu 1.9–2.0 times as long as section between dm-cu and bend of M. Petiole of wing cell r_{4+5} as long as 0.1–0.2 of section of M beyond bend. Claws 0.9 times as long as fifth tarsal segment. Mid tibia occasionally with 1–2 setae in addition to the strong anterodorsal bristle. Hairs on abdomen more recumbent and bristles in the dorsal median line more erect than in male; marginal bristles of tergite 5 all recumbent. – Postabdomen (Fig. 5): Sternite 6 with a short process on posteroventral margin. Sternite 7 and tergite 7 fused to a flat, heavily sclerotized, cutter-like sclerite with sharp ventral edge.

Differential diagnosis

Istocheta incisor n. sp. and *I. longicornis* (Fallén, 1810) are barely distinguishable by external morphological characters, but male and female genitalia are entirely different. The following key may be used to recognize the two species:

1 Thickened part of palpus about as wide as 1/3 of prementum in ♂, about half as wide in ♀. Basicosta dark brown in ♂, brown or light brown in ♀. – ♂ postabdomen (see Borisova-Zinov'eva 1966b: fig. 42): Surstyli bent forwards, distinctly widened basally, parallel in caudal view. Abruptly widened apical portion of the lobe-like appendages of the cerci folded inwards dorsally (in dry condition); appendages of moderate length, their free part beyond the insertion point about as long as the basal part of the cerci (measured in dorsal view from the insertion point of the appendages to the very base of the cerci, not in the midline). – ♀: Posterior margin of abdominal tergite 5 transversely oval in caudal view. Sternite 7 and tergite 7 of normal shape, not fused and without special modifications (compare Borisova-Zinov'eva 1966b: fig. 6). . ..... ***I. longicornis***

– Thickened part of palpus about half as wide as prementum in ♂, about as wide as 2/3 in ♀. Basicosta black in ♂, black or dark brown in ♀. – ♂ postabdomen (Fig. 4): Surstyli straight in lateral view, narrow over its whole length, convergent in basal half in caudal view. Appendages of the cerci continuously widened, not folded, very large; free part of the appendages beyond the insertion point about 5 times as long as the basal part of the cerci. – ♀: Posterior margin of abdominal tergite 5 longitudinally oval or rounded in caudal view. Sternite 7 and tergite 7 fused to a flat, heavily sclerotized, cutter-like sclerite with sharp ventral edge (Fig. 5). .... ***I. incisor*** n. sp. [+ ***I. nyctia***]

Istocheta nyctia (Borisova-Zinov'eva, 1966) (see Borisova-Zinov'eva 1966a: 272) from Russian Far East has the same special type of ovipositor as *I. incisor* n. sp., thus probably constituting a synapomorphy of the two species. In the key of Borisova Zinov'eva (1966b) *I. nyctia* and *I. longicornis* key out in the same couplet, but the given outer morphological differences are weak. According to this key *I. nyctia* has slightly narrower antennae and a bare anatergite. The presence of the special ovipositor is, however, a striking difference between the two species.

Females of *I. incisor* n. sp. and *I. nyctia* are well separable (males of *I. nyctia* are unknown) because the posteroventral margin of sternite 6 of *I. incisor* has a short process (absent in *I. nyctia*) and sternite/tergite 7 is more acute apically (compare Fig. 5a and Borisova-Zinov'eva 1966a: fig. 5 or Borisova-Zinov'eva 1966b: fig. 60).

The shape of sternite/tergite 7 of a specimen from China, treated as *I. nyctia* by Chao et al. (1998: fig. 3143U1), resembles more the new species than Borisova Zinov'eva's original description of *I. nyctia*.

Ecology

I. nyctia n. sp. was collected at full daylight during dry and sunny weather at a roadside with ruderal flora near alpine meadows. The specimens were feeding on flowers of *Pastinaca sativa* Linnaeus and *Laserpitium siler* Linnaeus (Daucaceae).

Remarks

Two males and ten females of *Istocheta longicornis* were collected together with the new species at the same places at the same time and on the same flowers. This was surprising because species of *Istocheta* were entirely absent during the long-time investigation of the tachinid fauna of the Hautes-Alpes (Tschorsnig et al. 2003), even though this neighbouring French département provides very similar habitats. Neither *Istocheta incisor* n. sp. nor *I. longicornis* were collected below 1800 m during the excursion, but *I. longicornis* is also known from low altitudes in other parts of Europe.

Hosts of *I. incisor* n. sp. are unknown, but are most likely to be adults of Scarabaeidae (Coleoptera) because all currently known hosts of *Istocheta* belong to this family (Borisova-Zinov'eva 1964). Also the mode of oviposition of *I. incisor* is unknown, but it is obvious that sternite/tergite 7 has probably the function to cut a slit into the host body, wide enough for a large egg to be deposited through this opening. It would be especially interesting to know if the egg is placed directly into the host body, or if the cut penetrates only the elytra and the egg is placed between elytra/wings and terga.

A typical piercer, in contrary, which is also known from several other tachinid genera (*Compsilura*, *Cylindromyia* etc.), would instead produce a narrow slit or hole for a narrow egg or larva. There are also three species of *Istocheta* [*I. rufipe*s Villeneuve, 1937, *I. subrufipes* (Borisova-Zinov'eva, 1964), *I. adrufipes* (Borisova-Zinov'eva, 1964)] which have the ovipositor not simply telescopic (as it is usually the case in this genus), but developed as a narrow and pointed piercer (compare Borisova-Zinov'eva 1964: figs. 25–27), not like a "cutter" as in *I. incisa* and *I. nyctia*.

4 References

Borisova-Zinov'eva, K. B. (1963): New species of tachinid flies (Diptera, Larvaevoridae), parasites of cock-chafers from the Far East and Altai. – Entomologiceskoe Obozrenie **42**: 678–690 [in Russian; translated in Entomological Review 42: 364–370].

Borisova-Zinov'eva, K. B. (1964): Parasites of imagines of Lamellicorn beetles – tachinids of the genus *Urophyllina* Villeneuve and of allied genera (Diptera, Larvaevoridae) in the fauna of the Far East. – Entomologiceskoe Obozrenie **43**: 768–788 [in Russian; translated in Entomological Review 43: 393–402].

Borisova-Zinov'eva, K. B. (1966a): New species of the genus *Hyperecteina* Schin. (Diptera: Larvaevoridae). – Trudy zoologiceskogo Instituta, Akademija Nauk SSSR **37**: 272–276 [in Russian].

Borisova-Zinov'eva, K. B. (1966b): On some species difficult to distinguish belonging to the genus *Hyperecteina* Schiner (Diptera, Larvaevoridae). – Acta entomologica bohemoslovaca **63**: 420–439 [in Russian].

Chao, C.-M. et al. (1998): Tachinidae. – In: Xue, W.-Q. & Chao, C.-M. (eds.): Flies of China, vol. **2**, 17 pp. + pp. 1661–2206, pls. 1–30; Shenyang (Liaoning Science and Technology Press) [in Chinese with English summary].

Herting, B. & Dely-Draskovits, Á. (1993): Family Tachinidae. – In: Soós, A. & Papp, L. (eds.): Catalogue of Palaearctic Diptera **13**: 118–624.

O'Hara, J. E., Shima, H. & Zhang, C.-T. (2009): Annotated catalogue of the Tachinidae (Insecta: Diptera) of China. – Zootaxa **2190**: 1–236.

Richter, V. A. (1995): A new subgenus and new species of Palaearctic tachinids (Diptera, Tachinidae). – Entomologiceskoe Obozrenie **74**: 913–922 [in Russian; translated in Entomological Review 75 (9): 244–254].

Tschorsnig, H.-P. & Richter, V. A. (1998): 3.54. Family Tachinidae. – In: Papp, L. & Darvas, B. (eds.): Contributions to a Manual of Palaearctic Diptera **3**: 691–827.

Tschorsnig, H.-P., Ziegler, J. & Herting, B. (2003): Tachinid flies (Diptera: Tachinidae) from the Hautes-Alpes, France. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **656**: 62 pp.

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Checklist of the fishes of New Caledonia, and their distribution in the Southwest Pacific Ocean (Pisces)

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Abstract

A checklist of the fishes of New Caledonia is presented. A total of 2328 species in 246 families have been recorded from the region. Eight of these species are not native, but have been introduced. Five fish families are represented only by introduced species. The native fish fauna of New Caledonia therefore consists of 2320 species in 241 families. The largest families are the Gobiidae, Labridae, Pomacentridae, Serranidae, Apogonidae, Blenniidae, Macrouridae, Myctophidae and Muraenidae. The freshwater fish fauna is dominated by the families Gobiidae, Eleotridae, Anguillidae and Mugilidae. A total of 61 species represent new records from New Caledonia.

The fish fauna from New Caledonia includes a total of 125 species occurring in freshwater (plus eight introduced species), 266 (plus two introduced) species in transitional (brackish) waters, and 2320 marine species. The detailed geographical distribution of the New Caldonian fish species including the southern submarine ridges (Lord Howe Island, Norfolk Island, New Zealand) is provided. Among the New Caledonian marine species, 905 are recorded from the East Coral Sea including Chesterfield Islands, 193 from the New Caledonian basin, 1860 from the Grande Terre group, 85 from the Norfolk Ridge, and 1029 from the Loyalty Ridge including Loyalty Islands. New Caledonia has a considerable endemic element of 107 species (4.6 % of the total native species).

K e y w o r d s : Fishes, Southwest Pacific Ocean, New Caledonia, checklist, distribution, endemism, new records.

Zusammenfassung

Die vorliegende Checkliste der Fische von Neukaledonien enthält 2328 Arten in 246 Familien. Acht Arten wurden eingeführt; fünf Familien enthalten nur eingeführte Arten. Die einheimische Fischfauna von Neukaledonien enthält daher 2320 Arten in 241 Familien. Die größten Familien sind die Gobiidae, Labridae, Pomacentridae, Serranidae, Apogonidae, Blenniidae, Macrouridae, Myctophidae und Muraenidae. Die Süßwasserfischfauna wird von den Familien Gobiidae, Eleotridae, Anguillidae und Mugilidae dominiert. Insgesamt 61 Arten werden zum ersten Mal für Neukaledonien nachgewiesen.

Die neukaledonische Fischfauna enthält 125 (sowie acht eingeführte) Süßwasserfischarten, 266 (sowie zwei eingeführte) Arten in Übergangsgewässern (Brackwasser), und 2320 marine Arten. Die detaillierte geographische Verbreitung der neukaledonischen Arten, einschließlich der südlichen untermeerischen Rücken (Lord Howe Island, Norfolk Island, Neuseeland) wird angegeben. In Neukaledonien leben insgesamt 905 der marinen Arten in der östlichen Korallensee (einschließlich der Chesterfield-Inseln), 193 im Neukaledonienbecken, 1860 in der Grande-Terre-Gruppe, 85 auf dem Norfolk-Rücken, und 1029 auf dem Loyalty-Rücken (einschließlich Loyalty-Inseln). Das endemische Faunenelement von Neukaledonien enthält 107 Arten (4.6 % der gesamten einheimischen Arten).

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1 Introduction

New Caledonia is a French overseas 'sui generis collectivity' (COM, Communauté d'Outre Mer), situated in the southwestern Pacific Ocean, approximately 950–2450 km east of the Mackay/Gladstone regions, Central Queensland, Australia. It comprises the main island Grande Terre with the Îles Bélep in the north and the Île des Pins in the south of the Grande Terre Group, the Loyalty Islands, the islands of Walpole (southern Loyalty Ridge), Matthew and Hunter (Vanuatu-Fiji Ridge), and the Chesterfield Islands and Bellona Reefs (Lord Howe Rise). The exclusive economic zone of New Caledonia also includes part of the northern Norfolk Ridge.

The New Caledonian main island of Grande Terre was originally part of the eastern Australian continent, and separated about 68 million years ago, moving towards the east (Yan & Kroenke 1993). 65.5 million years ago, the Norfolk Ridge was completely separated from the New Caledonian Ridge (to the east) and the Coral Sea Ridge/ Lord Howe Rise (to the west). Approximately 41 million years ago, the island of E'ua separated from southern

New Caledonia and rapidly moved eastward to form the Tonga Ridge. 17 million years ago, the Loyalty Islands formed east of New Caledonia, first as volcanoes, then by plate subduction forming atolls, which were recently partly raised. Approximately 500 000 years ago, it came to a near contact between the New Hebrides Arc (Vanuatu) and the Loyalty Arc; then the islands of Matthew and Hunter emerged.

Politically, there are three provinces in New Caledonia. The Province Nord includes northern Grande Terre and the Îles Bélep; the Province Sud comprises southern Grande Terre and the Île des Pins. The Province Îles includes the Loyalty Islands. The other, outer island groups (e. g. Chesterfield Islands, Walpole, Huon and Surprise Reefs, Matthew and Hunter) are not associated with provinces.

New Caledonia was settled by the Melanesian Lapita culture approximately 1500 BC. From the 11th century, Polynesians arrived and mixed with the local population. The first Europeans to reach the archipelago arrived with the second expedition of James Cook who explored northeastern Grande Terre in 1774. The biologists of this expedition, Johann Reinhold Forster and Georg Forster, collected two fish species which were later described by Bloch & Schneider (1801), *Atherinomorus lacunosus* and *Lethrinus miniatus*. A large pufferfish (Tetraodontidae) also procured during the expedition was not described, as the Forsters and the officers on board were seriously ill from having it for dinner.

New Caledonia became a French possession in late 1853. Shortly afterwards, Jouan (1861, 1863, 1879) described fish material collected from Grande Terre. Additional collections were presented by Sauvage (1874, 1878, 1880, 1881, 1883), Castelnau (1873), Ogilby (1898), Weber & Beaufort (1913, 1915, freshwater fishes), Borodin (1932) and Whitley (1961).

The Institut de Recherche pour le Développement at Nouméa (I. R. D, formerly O. R. S. T. O. M. = Office de la Recherche Scientifique et Technique Outre-Mer) played a leading role in the exploration of the New Caledonian ichthyofauna. Pierre Fourmanoir published numerous articles between 1966 and 1988 (with collaborators), followed by Jacques Rivaton (between 1989 and 1999) and the second author of the present paper (since 1987). Bernard Séret of the same institution published several papers on new chondrichthyans since 1990.

Two major monographs provided colour photographs of fishes from New Caledonia (Fourmanoir & Laboute 1976, Laboute & Grandperrin 2000). The excellent underwater photographs by Pierre Laboute are now housed in the I. R. D, Nouméa. A monograph on freshwater fishes of New Caledonia was published by Marquet et al. (2003).

The first (provisional) checklist of the fishes of New Caledonia was published by Rivaton et al. (1990). Subsequently, Kulbicki et al. (1994) provided a checklist of the fishes of the Chesterfield Islands, and Kulbicki & Williams (1997) of Ouvéa (Loyalty Islands). In their checklist of marine shore fishes, Fricke & Kulbicki (2006, 2007) included a total of 1694 species. In addition, Richer de Forges & Laboute (2009: Annexes 5, 6) listed shallow water fish species from the Loyalty Islands (Maré, Tiga and Lifou), and Richer de Forges & Richer de Forges (2010: Annex 30) from the atolls of Ouvéa and Beautemps-Beaupré. Recently, reports on fishes from northern and northeastern Grande Terre (Gabrié et al. 2007, Wantiez et al. 2010) provided additional distribution records.

The present checklist includes all fish species recorded from New Caledonia. It is intended as a baseline for future ichthyological research in the area, and to provide detailed information on the geographical distribution of the insular species in the southwestern Pacific Ocean.

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2 Methods and Materials

New Caledonia is defined by the New Caledonian exclusive economic zone (EEZ), including the islands of Matthew and Hunter; in the sea between New Caledonia and Vanuatu, where the EEZ is not clearly defined, the New Caledonian area boundary is defined by the midline between the New Caledonian and Vanuatu reefs and island shores (Fig. 1). The family classification and arrangement follows NELSON (2006), updated according to ESCHMEYER & FRICKE (2010). The genus and species classification also follows ESCHMEYER & FRICKE (2010), unless otherwise noted. In addition to the scientific name of a species, French and Melanesian names are provided (if available). For Melanesian names, the tribe who use the name is mentioned in parentheses.

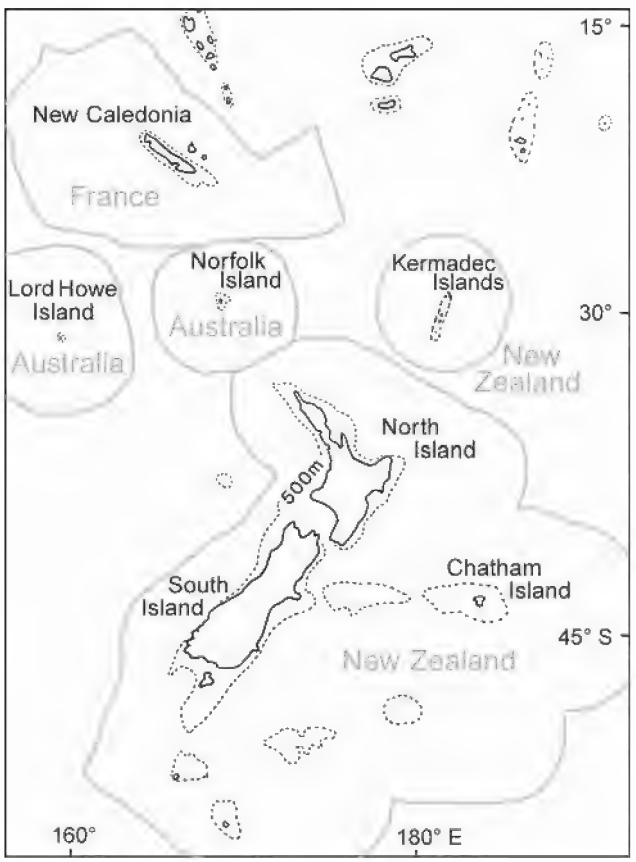

Fig. 1. Study area. The boundaries of the southwestern Pacific EEZs are indicated by grey lines.

Museum abbreviations (see below) follow FRICKE & ESCHMEYER (2010). If a species is recorded from New Caledonian waters for the first time, information on the source of the new record is given.

For each species, the first record from New Caledonian waters is given. If a first record from New Caledonia appeared in so-called grey literature (unpublished internal reports), the first published record is listed as well. In addition, synonyms and misidentifications used in the New Caledonian literature are provided. An asterisk indicates a species endemic to New Caledonia.

The checklist also includes detailed information on the distribution of the species around southwestern Pacific island groups, including New Caledonian regions as well as the continued southerly ridges including Lord Howe Island, Norfolk Island and New Zealand. New Caledonia is abbreviated "NC", Australia "AU", New Zealand "NZ"; the regions are numbered 1–30 (Fig. 2); a number without brackets indicates a confirmed record from the region, a number in brackets indicates an expected distribution in the region without a confirmed record. The list also includes information on the general habitat (marine, transitional water or freshwater), and the depth range. The name 'transitional water' is used instead of 'brackish water' due to terminology in the European Water Framework Directive.

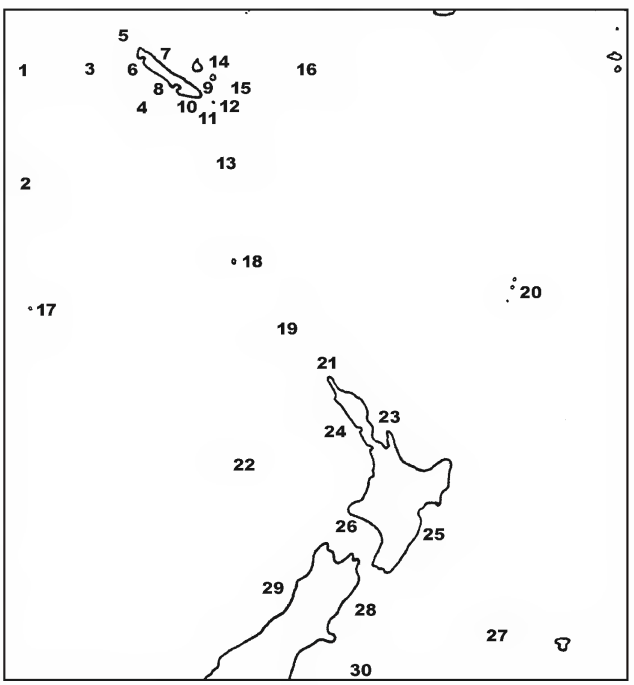

Fig. 2. Fish distribution in the southwestern Pacific. – **New Caledonia**: **1** Chesterfield Group including Saumarez Reef; **2** northern Lord Howe Rise; **3** Banc Lansdowne; **4** New Caledonian Basin; **5** Îles Bélep and northern lagoon, Grand Passage; **6** northwestern Grande Terre, Province Nord; **7** northeastern Grande Terre, Province Nord; **8** southwestern Grande Terre, Province Sud; **9** southeastern Grande Terre, Province Sud; **10** southern Grande Terre, Province Sud; **11** Grand Lagon Sud; **12** Île des Pins; **13** northern Norfolk Ridge; **14** Loyalty Islands and northern Loyalty Ridge; **15** southern Loyalty Ridge including Île Walpole; **16** Matthew and Hunter islands. – **Australia**: **17** southern Lord Howe Rise including Elizabeth and Middleton Reefs, Lord Howe Island; **18** central Norfolk Ridge including Norfolk Island. – **New Zealand**: **19** southern Norfolk Ridge; **20** Kermadec Ridge including Kermadec Islands; **21** Three Kings Ridge including Three Kings Islands; **22** Tasman Sea; **23** northeastern North Island; **24** northwestern North Island; **25** southeastern North Island; **26** southwestern North Island; **27** Chatham Rise including Chatham Islands; **28** northeastern South Island; **29** northwestern South Island; **30** southern South Island and subantarctic island groups of New Zealand.

Abbreviations of museum collections

AMNH	American Museum of Natural History, New York, USA
AMS	The Australian Museum, Sydney, Australia
ANSP	The Academy of Natural Sciences of Philadelphia, Philadelphia, USA
ASIZP	Academia Sinica, Research Center for Biodiversity, Taipei, Taiwan
BLIH	Biological Laboratory, Imperial Household, Tokyo, Japan
BMNH	The Natural History Museum, London, UK
BPBM	Bernice P. Bishop Museum, Honolulu, USA
CAS	California Academy of Sciences, San Francisco, USA
CSIRO	Commonwealth Scientific and Industrial Research Organisation, Division of Fisheries Research, Hobart, Tasmania, Australia
DASMN	Département d'Archéologie du Service des Musées de Nouméa, New Caledonia
FRLM	Fisheries Research Laboratory, Mie University, Mieken, Japan
FRSKU	Kyoto University, Faculty of Agriculture, Fisheries Research Station, Maizuru, Japan
GCRL	Gulf Coast Research Laboratory, University of Southern Mississippi, Ocean Springs, USA
HUMZ	Hokkaido University, Museum of Zoology, Hakodate, Japan
IIPB	Instituto de Ciencias del Mar, Departament de Biologia Marina i Oceanografia, Barcelona, Spain
IRDNC	Institut de Récherche pour le Développement, Nouméa, New Caledonia
IZUA	Instituto de Zoología, Universidad Austral de Chile, Valdivia, Chile
KAUM	Kagoshima University Museum, Korimoto, Kagoshima Prefecture, Japan
MNHN	Muséum National d'Histoire Naturelle, Paris, France
MUFS	Division of Fisheries Sciences, Department of Animal Science, Miyazaki University, Miyazaki, Japan
NMBA	Naturhistorisches Museum, Basel, Switzerland
NMNZ	Museum of New Zealand Te Papa Tongarewa, Wellington, New Zealand
NMV	Museum Victoria, Ichthyology, Melbourne, Australia
NMW	Naturhistorisches Museum, Wien, Austria
NSMT	National Science Museum, Zoology Department, Division of Fishes, Tokyo, Japan
NTM	Northern Territory Museum of Arts and Sciences, Darwin, Australia
QM	Queensland Museum, Brisbane, Australia
ROM	Royal Ontario Museum, Department of Natural History, Toronto, Canada
SMF	Senckenberg Forschungsinstitut und Naturmuseum, Abteilung Marine Zoologie, Frankfurt am Main, Germany
SMNS	Staatliches Museum für Naturkunde, Stuttgart, Germany
SU	Stanford University Collection [collection now deposited at CAS]
UF	University of Florida, Florida Museum of Natural History, Gainesville, USA
URB	University of the Ryukyus, Faculty of Science, Department of Chemistry, Biology and Marine Science, Nishihara, Japan
USNM	National Museum of Natural History, Smithsonian Institution, Washington D. C., USA
UW	University of Washington, College of Ocean and Fishery Sciences, Seattle, USA
WAM	Western Australian Museum, Perth, Australia
ZMA	Universiteit van Amsterdam, Faculty of Science, Zoölogisch Museum, Amsterdam, The Netherlands
ZMMU	Moscow State University, Zoological Museum, Moscow, Russia
ZMUC	Københavns Universitet, Zoologisk Museum, Copenhagen, Denmark

3 Annotated checklist of fish species of New Caledonia

Rhinochimaeridae

Rhinochimaera pacifica (Mitsukuri, 1895). – Taxonomy: Recorded from New Caledonia by Didier & Séret (2002: 232). MNHN material. – Distribution: NC: 13; NZ: 27, 30. Depth: 330–1490 m. Marine species.

Chimaeridae

Chimaera lignaria Didier, 2002. – Taxonomy: Recorded from New Caledonian Basin by Didier (2002: 300–303). NMNZ material. – Distribution: NC: 4; NZ: 23, 25, 27, 28, 30. Depth: 400–1800 m. Marine species.

Chimaera phantasma Jordan & Snyder, 1900. – Taxonomy: Recorded from New Caledonia by Rivaton et al. (1990: 35) and Didier & Séret (2002: 232). IRDNC and MNHN material. – Distribution: NC: 5, 13. Depth: 90–540 m. Marine species.

Hydrolagus trolli Didier & Séret, 2002. – Taxonomy: Originally described from New Caledonia by Didier & Séret (2002: 227–232). MNHN material. – Distribution: NC: 5, 13; NZ: 27, 30. Depth: 612–1707 m. Marine species.

Stegostomatidae

Stegostoma fasciatum (Hermann [ex Seba], 1783) – Requin léopard, requin zèbre. – Taxonomy: First record from New Caledonia by Fourmanoir (1981: 25); treated as *Stegostoma varium* by Fourmanoir & Laboute (1976: 340). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], 12, 14. Depth: 5–30 m. Transitional water and marine.

Ginglymostomatidae

Nebrius ferrugineus (Lesson, 1831) – Requin dormeur, requin nourrice. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 33); treated as *Nebrius concolor* by Fourmanoir & Laboute (1976: 340). – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 14. Depth: 5–30 m. Marine species.

Rhincodontidae

Rhincodon typus Smith, 1828 – Requin baleine. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 353). – Distribution: NC: [1], [4], [5], 6, 7, 8, [9], 10, [11], [12], [14]. Depth: 0–70 m. Marine species.

Odontaspididae

Odontaspis noronhai (Maul, 1955) – Requin noronhai. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 315); previously treated as *Odontaspis ferox* (non Risso, 1810) by Rivaton et al. (1990: 57). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 60–1000 m. Marine species.

Pseudocarchariidae

Pseudocarcharias kamoharai (Matsubara, 1936) – Requin crocodile. – Taxonomy: First record from New Caledonia by Compagno (2001: 72–74). – Distribution: NC: 1, [5], [7]; NZ: 21. Depth: 0–200 m. Marine species.

Alopiidae

Alopias pelagicus Nakamura, 1935 – Renard pélagique. – Taxonomy: First record from New Caledonia by Compagno (2001: 81–83). – Distribution: NC: [1], [2], [3], [4], [5], [6], [7], 8, [9], [10], [14]. Depth: 0–150 m. Marine species.

Alopias superciliosus (Lowe, 1841) – Requin fléau aux gros yeux. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 356). – Distribution: NC: [1], [2], [3], [4], [5], [6], [7], 8, [9], [10], [11], [12], [13], [14], [15], [16]; AU: [17], [18]; NZ: [19], [20], [21], [22], 23. Depth: 0–100 m. Marine species.

Alopias vulpinus (Bonnaterre, 1788) – Renard. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 48), and Laboute & Grandperrin (2000: 87). – Distribution: NC: [1], [2], [3], [4], [5], [6], [7], 8, [9], [10], [11], [12], [13], [14], [15], [16]; AU: [17], [18]; NZ: [19], [20], [21], [22], 23. Depth: 0–200 m. Transitional water and marine.

Lamnidae

Carcharodon carcharias (Linnaeus, 1758) – Requin blanc de la mort, grand requin blanc. – Taxonomy: First record from New Caledonia as *Squalus carcharias* by Jouan (1861: 245). – Distribution: NC: 8, [9], [10], [11], [12], [13], [14], [15], [16]; AU: [17], 18; NZ: [19], [20], 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–1280 m. Transitional water and marine.

Isurus oxyrinchus Rafinesque-Schmaltz, 1810 – Requin maquereau, bleu pointu. – Taxonomy: First record from New Caledonia as *Isurus oxyrhynchus* by Fourmanoir & Laboute (1976: 350). – Distribution: NC: 1, [2], [3], [4], [5], [6], [7], 8, [9], [10], [11], [12], [13], [14], [15], [16]; AU: [17], [18]; NZ: [19], [20], [21], [22], [23], [24], [25], [26], 27. Depth: 0–150 m. Marine species.

Isurus paucus Guitart Manday, 1966 – Requin maquereau à longues nageoires. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 353). – Distribution: NC: [10], [11], 12. Depth: 0–200 m. Marine species.

Scyliorhinidae

**Apristurus albisoma* Nakaya & Séret, 1999. – Taxonomy: Originally described from New Caledonia by Nakaya & Séret (1999: 301–307). MNHN material. – Distribution: NC: 2, [5], [7], 13. Depth: 935–1564 m. Marine species.

**Asymbolus galacticus* Séret & Last, 2008. – Taxonomy: Originally described from New Caledonia (Norfolk Ridge) by Séret & Last (2008b); previously listed as *Asymbolus* sp. by Rivaton et al. (1990: 68). CSIRO and MNHN material. – Distribution: NC: [5], [7], 13. Depth: 235–550 m. Marine species.

**Aulohalaelurus kanakorum* Séret, 1990. – Taxonomy: Originally described from New Caledonia by Séret (1990); previously listed as *Aulohalaelurus* sp. by Rivaton et al. (1990: 68). MNHN material (holotype). – Distribution: NC: [5], [7], 8. Depth: 49 m. Marine species.

Galeus priapus Séret & Last, 2008 – Chien priape. – Taxonomy: Originally described from New Caledonia by Séret & Last (2008a). MNHN material. – Distribution: NC: [5], [7], 11. Depth: 620–830 m. Marine species.

Triakidae

Hemitriakis japanica (Müller & Henle, 1839). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 72), Rivaton & Richer de Forges (1990: 34) and Kulbicki et al. (1994: 9). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 20–345 m. Marine species.

Mustelus manazo Bleeker, 1854 – Émissole étoilée. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 33) and Kulbicki et al. (1994: 9). IRDNC material. – Distribution: NC: 1, [5], [7], 8. Depth: 200–310 m. Marine species.

Carcharhinidae

Carcharhinus albimarginatus (Rüppell, 1837) – Requin à pointes blanches. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 348). – Distribution: NC: 1, [4], 5, 6, 7, 8, [9], 10, 14, 15, 16. Depth: 0–45 m. Marine species.

Carcharhinus amblyrhynchos (Bleeker, 1856) – Requin gris, requin de récif. – Taxonomy: First record from New Caledonia as *Carcharhinus amblyrhynchus* by Plessis & Fourmanoir (1966c: 123–124). – Distribution: NC: 1, [4], 5, 6, 7, 8, 9, 10, [11], [12], 14, [15]; AU: 17, 18; NZ: 20. Depth: 0–100 m. Marine species.

Carcharhinus brevipinna (Müller & Henle, 1839) – Requin tisserand. – Taxonomy: First record from New Caledonia by Caraguel & Iglesias (2004). MNHN material. – Distribution: NC: [5], [6], [7], 8, [9], 10. Depth: 0–100 m. Marine species.

Carcharhinus falciformis (Bibron in Müller & Henle, 1839) – Requin faux, requin à peau soyeuse. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 346). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12]. Depth: 0–500 m. Marine species.

Carcharhinus leucas (Valenciennes in Müller & Henle, 1839) – Requin taureau. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 354). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 1–30 m. Freshwater, transitional water and marine.

Carcharhinus limbatus (Valenciennes in Müller & Henle, 1839) – Requin à museau pointu. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 355). – Distribution: NC: 4, 5, 6, [7], 8, [9], 10. Depth: 0–30 m. Transitional water and marine.

Carcharhinus longimanus (Poey, 1861) – Requin océanique. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 346–347). – Distribution: NC: [5], [6], [7], 8, [9], [10]; NZ: 23. Depth: 0–150 m. Marine species.

Carcharhinus melanopterus (Quoy & Gaimard, 1824) – Requin à pointes noires, pointe noire. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 344–345). USNM material. – Distribution: NC: 1, [3], 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 0–75 m. Freshwater, transitional water and marine.

Carcharhinus obscurus (LeSueur, 1818) – Requin obscur, requin sombre. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 355). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–400 m. Transitional water and marine.

Carcharhinus plumbeus (Nardo, 1827) – Requin à haute dorsale, requin gris. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 349); species name spelled *plombeus* by Laboute & Grandperrin (2000: 93). – Distribution: NC: 1, [5], [6], [7], 8, [9], 10. Depth: 1–65 m. Transitional water and marine.

Carcharhinus sorrah (Valenciennes in Müller & Henle, 1839) – Requin àqueue tâcheté. – Taxonomy: First record from New Caledonia by Fourmanoir (1981: 24). – Distribution: NC: [5], 6, 7, 8, [9], 10. Depth: 0–140 m. Marine species.

Galeocerdo cuvier (Péron & LeSueur in LeSueur, 1822) – Requin tigre. – Taxonomy: First record from New Caledonia as *Galeocerdo cuvieri* by Kulbicki (1988b: 306); previously listed as ?*Galeus* sp. by Jouan (1861: 245). USNM material. – Distribution: NC: 1, 3, [5], 6, [7], 8, [9], [10], [11], 12, 14; AU: 17, 18; NZ: 20. Depth: 0–200 m. Freshwater, transitional water and marine.

Negaprion acutidens (Rüppell, 1837) – Requin citron. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 342). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], 12, 14. Depth: 0–92 m. Transitional water and marine.

Prionace glauca (Linnaeus, 1758) – Peau bleue. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 356). – Distribution: NC: 1, [2], [3], [4], [5], [6], [7], 8, [9], [10], [11], [12], [13], [14], [15], [16]; AU: [17], [18]; NZ: [19], [20], 21, [22], 23, 24, 25, 26, 27, 28, 29, 30. Depth: 1–220 m. Marine species.

Triaenodon obesus (Rüppell, 1837) – Aileron blanc du lagon, pointe blanche. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 352). USNM material. – Distribution: NC: 1, [4], 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 1–40 m. Marine species.

Sphyrnidae

Sphyrna lewini (Griffith & Smith, 1834) – Requin-marteau halicorne, pantouflier. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 343); previously treated as *Zygaena tudes* (non Valenciennes, 1822) by Jouan (1861: 245). – Distribution: NC: [1], [2], [3], [4], [5], 6, 7, 8, [9], [10], [11], [12], [13], [14], [15], [16]; AU: [17], [18]; NZ: [19], [20], [21], [22], 23. Depth: 1–50 m. Marine species.

Sphyrna mokarran (Rüppell, 1837) – Grand requin-marteau. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 354). – Distribution: NC: [5], 6, 7, 8, [9], [10]. Depth: 1–300 m. Marine species.

Hexanchidae

Heptranchias perlo (Bonnaterre, 1788) – Requin à sept fentes branchiales, requin perlon. – Taxonomy: Recorded from New Caledonia (Chesterfield Islands) by Kulbicki et al. (1994: 7). – Distribution: NC: 1. Depth: 0–450 m. Marine species.

Hexanchus nakamurai Teng, 1962 – Requin à six fentes branchiales, requin vache. – Taxonomy: First record from New Caledonia as *Hexanchus vitulus* by Kulbicki et al. (1994: 7) and Fricke & Kulbicki (2006: 316). IRDNC material. – Distribution: NC: 1. Depth: 0–600 m. Marine species.

Echinorhinidae

Echinorhinus cookei Pietschmann, 1928 – Squale bouclé du Pacifique. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 37). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12], [13], [14], [15], [16]; AU: [17], [18]; NZ: [19], [20], [21], [22], 23. Depth: 100–1100 m. Marine species.

Squalidae

Squalus blainville (Risso, 1827) – Aiguillat, chien de mer à épines. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 356). – Distribution: NC: [5], [7], 8, [9], [10], [11], 12; NZ: 19, [20], [21], [22], 23. Depth: 16–780 m. Marine species.

Squalus megalops (Macleay, 1881) – Aiguillat, chien de mer à épines, saumonette du Pacifique. – Taxonomy: First record from New Caledonia by Fourmanoir & Rivaton (1979: 436); named *Squalus* cf. *megalops* by Séret et al. (1997: 104). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 30–300 m. Marine species.

**Squalus melanurus* Fourmanoir & Rivaton, 1979 – Aiguillat à queue noire. – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) by Fourmanoir & Rivaton (1979: 438–441). – Distribution: NC: [5], [7], 8, [9], [10]. Depth: 320–340 m. Marine species.

Squalus rancureli Fourmanoir & Rivaton, 1979 – Aiguillat cyrano. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 72) and Kulbicki et al. (1994: 9). – Distribution: NC: 1, [5], [7]. Depth: 320–410 m. Marine species.

Centrophoridae

Centrophorus moluccensis Bleeker, 1860 – Squale-chagrin, cagaou. – Taxonomy: First record from New Caledonia by Séret et al. (1997: 104); previously treated as *Centrophorus scalpratus* by Fourmanoir & Rivaton (1979: 441–442). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 185–823 m. Marine species.

Etmopteridae

**Etmopterus caudistigmus* Last, Burgess & Séret, 2002. – Taxonomy: Originally described from New Caledonia (Loyalty Islands) by Last et al. (2002: 204–209). MNHN material. – Distribution: NC: [5], [7], 14. Depth: 638–793 m. Marine species.

Etmopterus dianthus Last, Burgess & Séret, 2002. – Taxonomy: Originally described from New Caledonia by Last et al. (2002: 209–211); previously treated as *Etmopterus lucifer* (non Jordan & Snyder, 1902) by Rivaton et al. (1990: 72). MNHN material. – Distribution: NC: [5], [7], [8], [10], 11. Depth: 108–880 m. Marine species.

Etmopterus dislineatus Last, Burgess & Séret, 2002. – Taxonomy: Originally described from New Caledonia by Last et al. (2002: 211–214). CSIRO, MNHN and UF material. – Distribution: NC: 1, [5], [7]. Depth: 590–800 m. Marine species.

**Etmopterus pseudosqualiolus* Last, Burgess & Séret, 2002 – Sagre rude. – Taxonomy: Originally described from New Caledonia (Norfolk Ridge) by Last et al. (2002: 220–222). CSIRO and MNHN material. – Distribution: NC: [5], [7], 13. Depth: 668–1170 m. Marine species.

Dalatiidae

Dalatias licha (Bonnaterre, 1788) – Squale liche. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 72). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]; NZ: [21], [22], [23], [24], [25], [26], 27, [28], [29], 30. Depth: 37–1800 m. Marine species.

Isistius brasiliensis (Quoy & Gaimard, 1824) – Squalelet féroce. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 72) and Laboute & Grandperrin (2000: 474). – Distribution: NC: [1], [2], [3], 4, [5], [6], [7], [8], [9], [10], [11], [12], [13], [14], [15], [16]; AU: 17, [18]; NZ: [19], [20], [21], [22], [23], [24], [25]. Depth: 1–3700 m. Marine species.

Rhinobatidae

Rhina ancylostoma Bloch & Schneider, 1801. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 65) and Fricke & Kulbicki (2006: 316). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 3–90 m. Marine species.

Rhynchobatus djiddensis (Forsskål in Niebuhr, 1775) – Raie guitare, raie à museau en pelle. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 363). – Distribution: NC: [5], [6], [7], 8, [9], 10, [11], 12. Depth: 2–50 m. Freshwater, transitional water and marine.

Rajidae

Raja (Dipturus) sp. – Taxonomy: Recorded from New Caledonia by Séret in Compagno et al. (1999: 1407). – Distribution: NC: [5], [7], 8. Depth: unknown. Marine species.

Arhynchobatidae

Notoraja (Insentiraja) sp. – Taxonomy: Recorded from New Caledonia by Séret in Compagno et al. (1999: 1407). – Distribution: NC: [5], [7], 8. Depth: unknown. Marine species.

Notoraja sapphira Séret & Last, 2009. – Taxonomy: Originally described from New Caledonia by Séret & Last (2009: 25); listed as *Pavoraja* sp. 2 by Séret in Grandperrin et al. (1997: 113). CSIRO and NMNZ material. – Distribution: NC: 13; NZ: 19. Depth: 1195–1313 m. Marine species.

Anacanthobatidae

Anacanthobatis sp. – Taxonomy: Recorded from New Caledonia as *Anacanthobatis* sp. B (Last & Stevens, 1994) by Compagno & Last (1999a: 1466). – Distribution: NC: 2, [5], [7], 13. Depth: unknown. Marine species.

Urolophidae

**Urolophus deforgesi* Séret & Last, 2003. – Taxonomy: Originally described from the Chesterfield Islands by Séret & Last (2003: 312); previously listed as *Urolophus* sp. nov. by Rivaton (1989: 147), and as *Urolophus* sp. 2 by Séret in Compagno et al. (1999: 1408, in part). AMS, CSIRO and MNHN material. – Distribution: NC: 1, [5], [7]. Depth: 203–330 m. Marine species.

**Urolophus neocaledoniensis* Séret & Last, 2003. – Taxonomy: Originally described from New Caledonia by Séret & Last (2003: 315–316); previously listed as *Urolophus* sp. by Rivaton et al. (1990: 77), and as *Urolophus* sp. 1 by Séret in Compagno et al. (1999: 1408). AMS, CSIRO and MNHN material. – Distribution: NC: 1, [5], [7], 11, 13. Depth: 229–428 m. Marine species.

**Urolophus papilio* Séret & Last, 2003. – Taxonomy: Originally described from New Caledonia (Chesterfield Islands) by Séret & Last (2003: 316–317); previously listed as *Urolophus* sp. nov. by Rivaton (1989: 147), and as *Urolophus* sp. 2 by Séret in Compagno et al. (1999: 1408, in part). AMS, CSIRO and MNHN material. – Distribution: NC: 1, [5], [7]. Depth: 330 m. Marine species.

Dasyatidae

Dasyatis bennettii (Müller & Henle, 1841). – Taxonomy: First record from New Caledonia as *Dasyatis benetti* by Rivaton et al. (1990: 37) and Tholiot (1996a: 4). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–40 m. Freshwater, transitional water and marine.

Dasyatis fluviorum Ogilby, 1908 – Raie d'estuaire. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 362). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–20 m. Freshwater, transitional water and marine.

Himantura fai Jordan & Seale, 1906 – Raie à longue queue. – Taxonomy: First record from New Caledonia by Randall (2005a: 18); previously treated as *Himantura* sp. 1 by Laboute & Grandperrin (2000: 102). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], 12. Depth: 0–200 m. Marine species.

Himantura granulata (Macleay, 1883) – Raie à queue blanche. – Taxonomy: First record from New Caledonia by Randall (2005a: 19); previously treated as *Himantura* sp. 2 by Laboute & Grandperrin (2000: 102). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–85 m. Transitional water and marine.

Neotrygon kuhlii (Müller & Henle, 1841) – Raie à points bleus. – Taxonomy: First record from New Caledonia as *Trygon kuhlii* by Günther (1910: 494); previously treated as *Raja trigonoides* by Castelnau (1873: 121). AMS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, 12, 14. Depth: 0–90 m. Marine species.

Pastinachus sephen (Forsskål in Niebuhr, 1775). – Taxonomy: First record from New Caledonia as *Dasyatis sephen* by Rivaton et al. (1990: 37) and Tholiot (1996b: 276). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–60 m. Freshwater, transitional water and marine.

Taeniura lymma (Forsskål in Niebuhr, 1775). – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 358); previously described as "Raie" by Jouan (1863: 187). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–20 m. Marine species.

Taeniura meyeni Müller & Henle, 1841 – Grande raie du récif, raie à tâches noires. – Taxonomy: First record from New Caledonia as *Taeniura melanospila* by Fourmanoir & Laboute (1976: 358–359); *Taeniura melanospila* is a synonym according to Last & Stevens (1994). – Distribution: NC: 5, 6, 7, 8, [9], [10], [11], [12]; AU: 17, 18. Depth: 10–60 m. Marine species.

Urogymnus asperrimus (Bloch & Schneider, 1801). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 37) and Evans (2006: 91); named *Urogymnus africanus* by Kulbicki et al. (1994: 9). – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 15–217 m. Marine species.

Myliobatidae

Aetobatus narinari (Euphrasen, 1790) – Aigle de mer tâcheté, raie léopard. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 357). – Distribution: NC: 1, 5, 6, [7], 8, [9], [10], 11, [12], 14. Depth: 1–80 m. Transitional water and marine.

Aetomylaeus maculatus (Gray, 1834) – Aigle de mer réticulé. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 57), and as *Aetobatus maculatus* by Fourmanoir & Laboute (1976: 360). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–18 m. Transitional water and marine.

Aetomylaeus vespertilio (Bleeker, 1852). – Taxonomy: First record from New Caledonia by Randall (2005a: 22). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 10–110 m. Marine species.

Manta alfredi (Krefft, 1868) – Diable de mer. – Taxonomy: **New record** from New Caledonia; previously treated as *Manta birostris* (non Walbaum, 1792) by Fourmanoir & Laboute (1976: 360–361). This species was treated as a synonym of *Manta birostris* Walbaum, 1792 by Last & Stevens (1994: 459). Taxonomic decision of Marshall et al. (2009: 13). – Distribution: NC: [1], [2], [3], [4], 5, 6, 7, 8, 9, 10, [11], 12, [13], 14, [15], [16]; AU: [17], [18]; NZ: [19], [20], [21], [22], 23. Depth: 0–120 m. Marine species.

Mobula tarapacana (Philippi, 1892) – Raie manta, manta. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 104). – Distribution: NC: [1], [2], [3], [4], [5], [6], [7], 8, [9], [10]. Depth: 0–30 m. Marine species.

Elopidae

Elops hawaiensis Regan, 1909 – Tarpon. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 316); previously treated as *Elops saurus* (non Linné, 1766) by Borodin (1932: 69), and as *Elops machnata* (non Forsskål in Niebuhr, 1775) by Kulbicki et al. (1993: 29). – Distribution: NC: [5], 6, [7], 8, [9], [10]. Depth: 1–30 m. Transitional water and marine.

Megalopidae

Megalops cyprinoides (Broussonet, 1782) – Tarpon indo-pacifique. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 302). – Distribution: NC: 5, 6, [7], 8, [9], [10]. Depth: 1–50 m. Freshwater, transitional water and marine.

Albulidae

Albula argentea (Schneider [ex Forster] in Bloch & Schneider, 1801). – Taxonomy: **New record** from New Caledonia; previously treated as *Albula vulpes* (non Linnaeus, 1758) by Fourmanoir & Laboute (1976: 302), and as *Albula forsteri* (non Valenciennes in Cuvier & Valenciennes, 1847) by Fricke & Kulbicki (2006: 316). Taxonomic decision of Hidaka et al. (2008: 56–59). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–20 m. Transitional water and marine.

Albula glossodonta (Forsskål in Niebuhr, 1775). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 22), Rivaton & Bourret (1999: 24), and Fricke & Kulbicki (2006: 316). – Distribution: NC: [1], [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 0–20 m. Transitional water and marine.

Halosauridae

Halosaurus pectoralis McCulloch, 1926. – Taxonomy: **New record** from New Caledonia; previously treated as *Halosaurus* sp. by Rivaton et al. (1990: 43) and Rivaton & Bourret (1999: 192). AMS material. Taxonomic decision of Paulin & Moreland (1979: 268). – Distribution: NC: 4, [5], [7], [8], [11], [13]; AU: 17, [18]; NZ: [19], [20], [21], 22, 23, [24], [25], [26]. Depth: 600–1270 m. Marine species.

Anguillidae

Anguilla australis Richardson, 1841 – Anguilla australe. – Taxonomy: First record from New Caledonia by Weber & Beaufort (1915: 20–21); subsequently recorded as *Anguilla australis schmidti* by Castle (1966: 68). – Distribution: NC: [1], [2], [3], 4, [5], 6, [7], 8, 9, 10, [11], 12, [13]; AU: 17, 18; NZ: [19], [21], [22], 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–3000 m. Freshwater, transitional water and marine.

Anguilla marmorata Quoy & Gaimard, 1824 – Anguilla marbrée, veré, dabang, aruwae. – Taxonomy: First record from New Caledonia by Castle (1966: 56, 68); previously recorded as *Anguilla mauritiana* by Weber & Beaufort (1915: 21). – Distribution: NC: [1], [2], [3], 4, [5], [6], [7], 8, 9. Depth: 0–3000 m. Freshwater, transitional water and marine.

Anguilla megastoma Kaup, 1856 – Anguille de montagne, anguille rouge, den. – Taxonomy: First record from New Caledonia by Castle (1966: 56, 68). – Distribution: NC: [1], [2], [3], 4, [5], 6, [7], 8, 9, 10, [11], 12. Depth: 0–3000 m. Freshwater, transitional water and marine.

Anguilla obscura Günther, 1872 – Anguille de vase, anguille sombre, veré (Drubea), venya (Iaai), iepee (Nengone). – Taxonomy: First record from New Caledonia by Castle (1966: 56, 68). – Distribution: NC: [1], [2], [3], 4, [5], 6, [7], 8, 9, 10, [11], 12, 14. Depth: 0–3000 m. Freshwater, transitional water and marine.

Anguilla reinhardtii Steindachner, 1867 – Anguille tachetée, anguille de Reinhardt, veré (Drubea). – Taxonomy: First record from New Caledonia by Ogilby (1898: 765–766). – Distribution: NC: 4, [5], 6, [7], 8, 9, 10; AU: 17. Depth: 0–3000 m. Freshwater, transitional water and marine.

Moringuidae

Moringua ferruginea Bliss, 1883. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 53), and by Fricke & Kulbicki (2006: 316). SMNS material. – Distribution: NC: 1, [5], [7], 8, 10, [11], 12. Depth: 0–40 m. Marine species.

Moringua javanica (Kaup, 1856). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 53), and by Fricke & Kulbicki (2006: 316). SMNS material. – Distribution: NC: [1], [5], [6], [7], 8, 9, [10], 14. Depth: 0–15 m. Marine species.

Moringua macrochir Bleeker, 1855. – Taxonomy: First record from New Caledonia by Castle (1966: 70). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–15 m. Marine species.

Moringua microchir Bleeker, 1853 – Anguille spaghetti. – Taxonomy: First record from New Caledonia by Dingerkus & Séret (1992b). MNHN material. – Distribution: NC: [5], 6, [7], 8, 9, [10]. Depth: 0–10 m. Freshwater, transitional water and marine.

Chlopsidae

Chlopsis bidentatus Tighe & McCosker, 2003. – Taxonomy: Originally described from New Caledonia by Tighe & McCosker (2003: 5). MNHN material (holotype). – Distribution: NC: [5], [7], 13. Depth: 444–503 m. Marine species.

Kaupichthys atronasus Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 11). SMNS and USNM material. – Distribution: NC: [5], [7], 14. Depth: 1–20 m. Marine species.

Kaupichthys brachychirus Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by Fricke & Kulbicki (2006: 316). SMNS material. – Distribution: NC: [5], 7. Depth: 1–43 m. Marine species.

Kaupichthys diodontus Schultz, 1943. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 77) and Fricke & Kulbicki (2006: 316). IRDNC and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–56 m. Marine species.

Kaupichthys hyoproroides (Strömmann, 1896). – Taxonomy: First record from New Caledonia as *Leptocephalus hyoproroides* by Castle (1964: 36–37). – Distribution: NC: 1, [5], 6, [7], 8, 9, 10, 14. Depth: 1–95 m. Marine species.

Thalassenchelys foliaceus Castle & Raju, 1975. – Taxonomy: First record from New Caledonia by Shinokawa et al. (1995: 90–91). – Distribution: NC: 4, [5], [7]. Depth: 1000–2000 m. Marine species.

Xenoconger fryeri Regan, 1912. – Taxonomy: First record from New Caledonia by Myers (1999: 42). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–5 m. Marine species.

Myrocongridae

**Myroconger prolixus* Castle & Bearez, 1995. – Taxonomy: Originally described from New Caledonia (northern Norfolk Ridge) by Castle & Bearez (1995: 212–215). MNHN material (holotype). – Distribution: NC: [5], [7], 13. Depth: 260–280 m. Marine species.

Muraenidae

Anarchias schultzi Reece, Smith & Holm, 2010. – Taxonomy: First record from New Caledonia in original description by Reece et al. (2010: 427); previously reported as *Anarchias cantonensis* (non Schultz, 1943) by Kulbicki & Williams (1997: 11). USNM material. – Distribution: NC: [5], [7], 14. Depth: 0–25 m. Marine species.

Anarchias seychellensis Smith, 1962. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54), Rivaton & Bourret (1999: 24) and Fricke & Kulbicki (2006: 317). This record may represent an undescribed species, as *A. seychellensis* sensu lato is probably consisting of two or more separate species (McCosker & Stewart 2006: 88). SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–35 m. Marine species.

Cirrimaxilla formosa Chen & Shao, 1995. – Taxonomy: First record from New Caledonia by Séret et al. (2008). – Distribution: NC: [5], [7], 8. Depth: 0–5 m. Marine species.

Echidna amblyodon (Bleeker, 1856). – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by Fricke & Kulbicki (2006: 317). SMNS material. – Distribution: NC: [5], 7. Depth: 2–20 m. Marine species.

Echidna delicatula (Kaup, 1856). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 317). SMNS material. – Distribution: NC: [5], [7], 14. Depth: 0–30 m. Marine species.

Echidna leucotaenia Schultz, 1943. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 317). SMNS material. – Distribution: NC: [5], 6, [7], 8, 9, [10], 14. Depth: 0–24 m. Marine species.

Echidna nebulosa (Ahl, 1789) – Murène étoilée. – Taxonomy: First record from New Caledonia as *Megaderus nebulosus* by Plessis & Fourmanoir (1966c: 143); previously reported as *Lycodontis boschi* by Whitley (1961: 65). AMS, IRDNC and SMNS material. – Distribution: NC: [1], [3], [5], [6], [7], 8, 9, [10], [11], 12; AU: 17, 18. Depth: 0–48 m. Marine species.

Echidna polyzona (Richardson, 1845). – Taxonomy: First record from New Caledonia as *Leihala polyzona* by Whitley (1961: 64). IRDNC, SMNS and USNM material. – Distribution: NC: [5], [7], 8, 9, 14. Depth: 0–15 m. Marine species.

Echidna unicolor Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 11). SMNS and USNM material. – Distribution: NC: [5], [6], [7], [8], [9], 10, 14. Depth: 2–25 m. Marine species.

Enchelycore bayeri (Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and Kulbicki et al. (1994: 19). – Distribution: NC: 1, [5], [7], 8. Depth: 0–38 m. Marine species.

Enchelycore pardalis (Temminck & Schlegel, 1846). – Taxonomy: First record from New Caledonia by Fricke (1999: 42–43). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 5–60 m. Marine species.

Gymnomuraena zebra (Shaw in Shaw & Nodder, 1797) – Murène zébrée. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 110). IRDNC and SMNS material. – Distribution: NC: [5], [6], [7], 8, 9, [10]. Depth: 3–50 m. Marine species.

Gymnothorax albimarginatus (Temminck & Schlegel, 1846). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and by Kulbicki & Wantiez (1990: 124); also reported as *Gymnothorax hepaticus* (non Rüppell, 1830) by Rivaton et al. (1990: 54). IRDNC material. – Distribution: NC: [5], 6, [7], 8, [9], [10]. Depth: 36–180 m. Marine species.

Gymnothorax berndti Snyder, 1904. – Taxonomy: First record from New Caledonia as *Lycodontis berndti* by Fourmanoir & Rivaton (1979: 428). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]; NZ: 20. Depth: 80–290 m. Marine species.

Gymnothorax buroensis (Bleeker, 1857). – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute

(1976: 310). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–25 m. Marine species.

Gymnothorax chilospilus Bleeker, 1864. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and Kulbicki et al. (1994: 10). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [7], 8, 14. Depth: 0–45 m. Marine species.

Gymnothorax eurostus (Abbott, 1860). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and Kulbicki & Williams (1997: 11). BPBM, IRDNC, SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14; AU: 17, 18; NZ: 20. Depth: 0–74 m. Marine species.

Gymnothorax fimbriatus (Bennett, 1832). – Taxonomy: First record from New Caledonia as *Lycodontis fimbriatus* by Fourmanoir (1981: 28); previously reported as *Lycodontis melanospilus* (non Bleeker, 1855) by Whitley (1961: 65). AMS and IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–45 m. Marine species.

Gymnothorax flavimarginatus (Rüppell, 1830) – Murène à points jaunes. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 310). SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 0–150 m. Marine species.

Gymnothorax fuscomaculatus (Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and Kulbicki et al. (1994: 10). BPBM, IRDNC and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–21 m. Marine species.

Gymnothorax gracilicauda Jenkins, 1903. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 317). SMNS material. – Distribution: NC: [5], [7], 14. Depth: 0–20 m. Marine species.

Gymnothorax intesi (Fourmanoir & Rivaton, 1979). – Taxonomy: Originally described from New Caledonia by Fourmanoir & Rivaton (1979: 426–428). MNHN material (holotype). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 200–400 m. Marine species.

Gymnothorax javanicus (Bleeker, 1859) – Murène javanaise. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 310–311). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 11, 12, 14. Depth: 0–50 m. Marine species.

Gymnothorax kidako (Temminck & Schlegel, 1846). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 317); previously reported as *Gymnothorax* sp. 5 by Laboute & Grandperrin (2000: 14). – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 2–350 m. Marine species.

Gymnothorax margaritophorus Bleeker, 1864. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and Kulbicki et al. (1994: 10). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 1–25 m. Marine species.

Gymnothorax marshallensis (Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953). – Taxonomy: First record from New Caledonia (Ouvéa) by Kulbicki & Williams (1997: 11). USNM material. – Distribution: NC: [5], [7], 14. Depth: 0–10 m. Marine species.

Gymnothorax melatremus Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and Kulbicki et al. (1994: 10). BPBM, IRDNC and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 1–58 m. Marine species.

Gymnothorax meleagris (Shaw in Shaw & Nodder, 1795) – Murène à points blancs. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 143). IRDNC and SMNS material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–51 m. Marine species.

Gymnothorax monochrous (Bleeker, 1856). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and Randall (2005a: 44). SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–20 m. Marine species.

Gymnothorax nudivomer (Günther in Playfair & Günther, 1867) – Murène à gueule jaune. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and Myers (1999: 48–50); previously reported as *Gymnothorax xanthostomus* by Fourmanoir & Laboute (1976: 314). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 2–271 m. Marine species.

Gymnothorax pictus (Ahl, 1789) – Murène grise des flaques. – Taxonomy: First record from New Caledonia as *Lycodontis picta* by Fowler (1928: 51–52); previously reported as *Muraena* sp. by Jouan (1861: 251–252) and as *Muraenophis variegata* by Jouan (1879: 333); also reported as *Gymnothorax* sp. 4 by Laboute & Grandperrin (2000: 113). – Distribution: NC: [5], [6], [7], 8, [9], 10, [11], [12]; NZ: 20. Depth: 0–100 m. Marine species.

Gymnothorax pindae Smith, 1962. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and Kulbicki et al. (1994: 10); subsequently reported as *Gymnothorax* sp. 3 by Laboute & Grandperrin (2000: 113). BPBM, IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], 6, [7], 8, 14. Depth: 0–43 m. Marine species.

Gymnothorax polyuranodon (Bleeker, 1853) – Murène d'eau douce; Pierawai (Paici). – Taxonomy: First record from New Caledonia by Marquet et al. (1997: 29). – Distribution: NC: [5], 6, [7], 8, 9, 10. Depth: 0–10 m. Freshwater, transitional water and marine.

Gymnothorax porphyreus (Guichenot, 1848). – Taxonomy: First record from New Caledonia by Randall (2005a: 46); previously reported as *Gymnothorax* sp. 2 and sp. 6 by Laboute & Grandperrin (2000: 113, 114). – Distribution: NC: [5], [7], 8, [9], [10], [11], [12], 14; AU: 17, 18; NZ: 20, 23, 24, 25. Depth: 1–40 m. Marine species.

Gymnothorax pseudothyrsoideus (Bleeker, 1852). – Taxonomy: First record from New Caledonia as *Lycodontis pseudothyrsoideus* by Whitley (1961: 65). AMS, IRDNC and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–20 m. Marine species.

Gymnothorax richardsonii (Bleeker, 1852). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and Kulbicki et al. (1994: 10); subsequently reported as *Gymnothorax reticularis* (non Bloch, 1795) by Laboute & Grandperrin (2000: 112). IRDNC and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 0–15 m. Marine species.

Gymnothorax rueppellii (McClelland, 1844). – Taxonomy: First record from New Caledonia as *Gymnothorax rueppelliae* by Rivaton et al. (1990: 54) and Kulbicki & Williams (1997: 11). SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–40 m. Marine species.

Gymnothorax thyrsoideus (Richardson, 1845). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 54) and Thollot (1996b: 279); previously reported as *Siderea grisea* (non Lacepède, 1803) by Jouan (1863: 183–184); also listed as *Siderea prosopeion* by Kulbicki et al. (1994: 10). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, [7], 8, [9], 10, [11], [12], 14; NZ: 20. Depth: 0–30 m. Marine species.

Gymnothorax undulatus (Lacepède [ex Commerson], 1803) – Murène ondulante. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 312–313). IRDNC and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], 10, 14. Depth: 0–26 m. Marine species.

Gymnothorax zonipectis Seale, 1906. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 10). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], 7, 8, 14. Depth: 1–40 m. Marine species.

Rhinomuraena quaesita Garman, 1888 – Murène ruban barde. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 314). – Distribution: NC: 5, [6], [7], 8, [9], [10], [11], 12, 14. Depth: 1–57 m. Marine species.

Scuticaria tigrina (Lesson, 1828). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55, as *Uropterygius tigrinus*), and by Fricke & Kulbicki (2006: 318). SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–20 m. Marine species.

Strophidon sathete (Hamilton, 1822) – Murène à longue queue. – Taxonomy: First record from New Caledonia by Thollot (1996a: 7); previously reported as *Thyrsoidea macrura* by Fourmanoir & Laboute (1976: 314). – Distribution: NC: [5], [6], 7, 8, [9], [10]. Depth: 1–15 m. Freshwater, transitional water and marine.

Uropterygius alboguttatus Smith, 1962. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 318). SMNS material. – Distribution: NC: [5], [7], 14. Depth: 1–56 m. Marine species.

Uropterygius concolor Rüppell, 1838 – Murène marron. – Taxonomy: First record from New Caledonia as *Gymnomuraena concolor* by Plessis & Fourmanoir (1966c: 143). IRDNC and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–8 m. Transitional water and marine.

Uropterygius fuscoguttatus Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 10). BPBM and USNM material. – Distribution: NC: 1, [5], [7], 14. Depth: 1–25 m. Marine species.

Uropterygius macrocephalus (Bleeker, 1864). – Taxonomy: First record from New Caledonia by Böhlke & Randall (2000: 269–270); also reported as *Uropterygius makatei* Gosline, 1958 by Kulbicki & Williams (1997: 11). *Uropterygius makatei* is a junior synonym of *U. macrocephalus* according to D. G. Smith (personal communication, July 2010). SMNS and USNM material. – Distribution: NC: [5], [7], 14. Depth: 1–14 m. Marine species.

Uropterygius marmoratus (Lacepède, 1803). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 318). IRDNC and SMNS material. – Distribution: NC: [5], [6], [7], [8], 9, [10]. Depth: 1–20 m. Transitional water and marine.

Uropterygius xenodontus McCosker & Smith, 1997. – Taxonomy: Originally described from New Caledonia by McCosker & Smith (1997: 1006–1011). BPBM material (holotype). – Distribution: NC: 1, [5], [7]. Depth: 6–35 m. Marine species.

Synaphobranchidae

Atractodenchelys robinsorum Karmovskaya, 2003. – Taxonomy: Originally described from New Caledonia by Karmovskaya (2003: 441–443). MNHN material (holotype). – Distribution: NC: 1, [5], [7]. Depth: 710 m. Marine species.

Diastobranchus capensis (Barnard, 1923). – Taxonomy: First record from New Caledonia by Sulak & Shcherbachev (1997: 1186). MNHN material. – Distribution: NC: [1], [2], [3], 4, [5], [6], [7], [8], [9], [10], [11], [13], [14], [15], [16]; AU: [17], [18]; NZ: [19], [20], 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 183–2000 m. Marine species.

Dysommina rugosa Ginsburg, 1951. – Taxonomy: First record from New Caledonia by Karmovskaya (2003: 443–445). MNHN material. – Distribution: NC: [5], [7], [8], [9], [10], [11], 12. Depth: 260–775 m. Marine species.

Haptenchelys texis Robins & Martin in Robins & Robins, 1976. – Taxonomy: First record from New Caledonia by Karmovskaya (2003: 438–440). MNHN material. – Distribution: NC: [5], [7], [8], 9, [10], [11], 12, [14]. Depth: 2121–4086 m. Marine species.

Meadia abyssalis (Kamohara, 1938). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73) and Karmovskaya (2003: 438–440). MNHN material. – Distribution: NC: [4], [5], [7], [8], [9], [10], [11], 12. Depth: 100–329 m. Marine species.

Synaphobranchus affinis Günther, 1877. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73) and Karmovskaya (2003: 437–438). MNHN material. – Distribution: NC: 2, [4], [5], [7]; NZ: [22], 23, 24, 25, 26, 27. Depth: 290–2334 m. Marine species.

Synaphobranchus brevidorsalis Günther, 1887. – Taxonomy: First record from New Caledonia by Karmovskaya (2003: 438). MNHN material. – Distribution: NC: 3, [4], [5], [7]. Depth: 230–2960 m. Marine species.

Synaphobranchus oregoni Castle, 1960. – Taxonomy: First record from New Caledonia by Sulak & Shcherbachev (1997: 1186); previously listed as *Synaphobranchus* sp. by Rivaton et al. (1990: 73). MNHN material. – Distribution: NC: 1, [2], [4], [5], [7], 13. Depth: 512–1900 m. Marine species.

Ophichthidae

Apterichtus klazingai (Weber, 1913). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 58) and Rivaton & Richer de Forges (1990: 31). SMNS material. – Distribution: NC: 1, [5], 7, 8, 14. Depth: 1–120 m. Marine species.

Callechelys catostoma (Schneider [ex Forster] in Bloch & Schneider, 1801). – Taxonomy: First record from New

Caledonia by FRICKE & KULBICKI (2006: 318); previously listed as *Callechelys melanotaenia* by RIVATON et al. (1990: 58). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 1–32 m. Marine species.

Callechelys marmorata (Bleeker, 1853). – Taxonomy: First record from New Caledonia by FRICKE & KULBICKI (2006: 318); previously listed as *Myrichthys* sp. by LABOUTE & GRANDPERRIN (2000: 118). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 2–37 m. Marine species.

Ichthyapus vulturis (Weber & Beaufort, 1916). – Taxonomy: First record from New Caledonia by FRICKE & KULBICKI (2006: 318). SMNS material. – Distribution: NC: 1, [5], [7]. Depth: 0–56 m. Marine species.

Lamnostoma kampeni (Weber & Beaufort, 1916) – Anguille serpent. – Taxonomy: First record from New Caledonia by SÉRET & DINGERKUS (1992: 169). MNHN material. – Distribution: NC: [5], 6, [7], 8, 9, 10. Depth: 0–10 m. Freshwater, transitional water and marine.

Lamnostoma orientalis (McClelland, 1844) – Lamnostome oriental, anguille serpent. – Taxonomy: First record from New Caledonia by MARQUET et al. (2003: 138–139). – Distribution: NC: [5], 6, [7]. Depth: 0–10 m. Freshwater, transitional water and marine.

Leiuranus semicinctus (Lay & Bennett, 1839) – Poisson-serpent. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 58), RIVATON & RICHER DE FORGES (1990: 31) and KULBICKI et al. (1994: 10). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], 12, 14; AU: 17, 18. Depth: 0–10 m. Marine species.

Muraenichthys schultzei Bleeker, 1857. – Taxonomy: First record from New Caledonia by FRICKE & KULBICKI (2006: 318). SMNS material. – Distribution: NC: [5], [6], [7], 8. Depth: 0–19 m. Marine species.

Myrichthys colubrinus (Boddaert, 1781). – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 116–117). SMNS material. – Distribution: NC: [1], [5], [6], [7], 8, 9, [10], 14. Depth: 0–20 m. Marine species.

Myrichthys maculosus (Cuvier, 1816). – Taxonomy: First record from New Caledonia by WHITLEY (1961: 65). AMS material. – Distribution: NC: [1], [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18. Depth: 0–30 m. Marine species.

Myrophis microchir (Bleeker, 1864). – Taxonomy: **New record** from New Caledonia; previously reported as *Echelus uropterus* (non Temminck & Schlegel, 1846) by RIVATON et al. (1990: 58), RIVATON & RICHER DE FORGES (1990: 31) and KULBICKI et al. (1994: 10). Taxonomic decision of KARRER (1982: 79), according to J. E. MCCOSKER (personal communication, July 2010). SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 1–35 m. Marine species.

Ophichthus bonaparti (Kaup, 1856). – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 118). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–20 m. Marine species.

Ophichthus brachynotopterus Karrer, 1982. – Taxonomy: First record from New Caledonia by MCCOSKER (2010: 11–12). – Distribution: NC: 7. Depth: 355–580 m. Marine species.

Ophichthus cephalozona Bleeker, 1864. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 58) and THOLLOT (1996a: 7). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–30 m. Marine species.

Ophichthus exourus McCosker, 1999. – Taxonomy: Originally described from New Caledonia (Grand Passage) by MCCOSKER (1999: 575–577). MNHN material (holotype). – Distribution: NC: 5, [7]. Depth: 400–520 m. Marine species.

Ophichthus genie McCosker, 1999. – Taxonomy: Originally described from New Caledonia (Grand Passage) by MCCOSKER (1999: 577–579). ANSP, CAS and MNHN material. – Distribution: NC: 5, [7]. Depth: 215–500 m. Marine species.

Ophichthus lentiginosus McCosker, 2010. – Taxonomy: Originally described from New Caledonia (Hienghene) by MCCOSKER (2010: 25). MNHN material. – Distribution: NC: 7. Depth: 398–400 m. Marine species.

Ophichthus microstictus McCosker, 2010. – Taxonomy: Questionably reported from New Caledonia (Balade) in original description by MCCOSKER (2010: 28–29). MNHN material. – Distribution: NC: 5. Depth: 200–450 m. Marine species.

**Ophichthus mystacinus* McCosker, 1999. – Taxonomy: Originally described from New Caledonia (Grand Passage) by MCCOSKER (1999: 579–581). BPBM, CAS and MNHN material. – Distribution: NC: 5, [7]. Depth: 450–580 m. Marine species.

Pisodonophis boro (Hamilton, 1822). – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 107, 116, 118). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–10 m. Freshwater, transitional water and marine.

**Rhinophichthus penicillatus* McCosker, 1999. – Taxonomy: Originally described from New Caledonia (Grand Passage) by MCCOSKER (1999: 581–583). CAS and MNHN material. – Distribution: NC: 5, [7]. Depth: 435 m. Marine species.

Schismorhynchus labialis (Seale, 1917). – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 11). USNM material. – Distribution: NC: [5], [7], 14. Depth: 0–21 m. Marine species.

Schultzidia johnstonensis (Schultz & Woods, 1949). – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 11). USNM material. – Distribution: NC: [5], [7], 14. Depth: 2–35 m. Marine species.

Scolecenchelys gymnota (Bleeker, 1857). – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 10). SMNS and USNM material. – Distribution: NC: 1, [5], [7], 14. Depth: 0–30 m. Marine species.

Scolecenchelys laticaudata (Ogilby, 1897). – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 11). – Distribution: NC: 1, [5], [7]; AU: 17. Depth: 0–26 m. Marine species.

Scolecenchelys macroptera (Bleeker, 1857). – Taxonomy: First record from New Caledonia as *Muraenichthys macropterus* by OGILBY (1898: 770). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–33 m. Marine species.

**Yirrkala insolitus* McCosker, 1999. – Taxonomy: Originally described from New Caledonia (Récif des Français) by

McCosker (1999: 584–585); previously treated as *Yirrkala lumbricoides* (non Bleeker, 1853) by Rivaton et al. (1990: 58). MNHN material (holotype). – Distribution: NC: 5, [7]. Depth: 59 m. Marine species.

**Yirrkala* sp. (to be described by J. E. McCosker). – Taxonomy: Recorded from New Caledonia (south of Île Puen) by J. E. McCosker (personal communication, July 2010). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 2–5 m. Marine species.

Colocongridae

Coloconger saldanhai Quéro, 2001. – Taxonomy: Originally described from New Caledonia (Grand Passage) by Quéro (2001: 57–61). MNHN material. – Distribution: NC: 5, [7]. Depth: 580 m. Marine species.

Coloconger scholesi Chan, 1967. – Taxonomy: First record from New Caledonia by Quéro (2001: 54–57). MNHN material. – Distribution: NC: 1, 3, [5], [7]. Depth: 412–970 m. Marine species.

Derichthyidae

Nessorhamphus danae Schmidt, 1931. – Taxonomy: **New record** from New Caledonia; previously listed as *Nessorhamphus* sp. by Rivaton et al. (1990: 37) and Rivaton & Bourret (1999: 188). – Distribution: NC: [5], [7], 14. Depth: 0–410 m. Marine species.

Nessorhamphus ingolfianus (Schmidt, 1912). – Taxonomy: **New record** from New Caledonia; previously listed as *Nessorhamphus* sp. by Rivaton et al. (1990: 37) and Rivaton & Bourret (1999: 188). IRDNC material. – Distribution: NC: [5], [7], 14. Depth: 0–410 m. Marine species.

Muraenesocidae

Muraenesox bagio (Hamilton, 1822) – Murénésoce commun. – Taxonomy: First record from New Caledonia by Thollot & Kulbicki (1988: 618); subsequently reported as *Muraenesox* sp. by Rivaton et al. (1990: 36). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–100 m. Transitional water and marine.

Nemichthyidae

Avocettina infans (Günther, 1878). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 57) and Rivaton & Bourret (1999: 188); previously reported as '*Borodulina gilli* ou *B. infans*' by Castle (1966: 59, 69). IRDNC material. – Distribution: NC: 4, [5], [7]; NZ: 26, 27. Depth: 0–4580 m. Marine species.

Nemichthys scolopaceus Richardson, 1848. – Taxonomy: First record from New Caledonia by Castle (1966: 59, 69); previously reported as *Nemichthys* sp. by Fourmanoir (1971b: 111). IRDNC material. – Distribution: NC: 4, [5], [7], [13]; NZ: [19], 20, [21], 22, 23, 24, 25, 26, 27. Depth: 0–3656 m. Marine species.

Congridae

Acromycter longipectoralis Karmovskaya, 2004. – Taxonomy: Originally described from New Caledonia (Grand Passage) by Karmovskaya (2004: S21). MNHN material (holotype). – Distribution: NC: 5, [7]. Depth: 580 m. Marine species.

Ariosoma anago (Temminck & Schlegel, 1846). – Taxonomy: First record from New Caledonia as *Leptocephalus Ariosoma anago* by Castle (1964: 13–14). IRDNC material. – Distribution: NC: 1, [5], 6, [7], 8, 9, 10, [11], [12], 13, 14. Depth: 2–30 m. Marine species.

Ariosoma anagoides (Bleeker, 1853). – Taxonomy: First record from New Caledonia as *Leptocephalus ?Alloconger anagoides* by Castle (1966: 58, 69). – Distribution: NC: [4], [5], [6], [7], 8, [9], [10]. Depth: 10–250 m. Marine species.

Ariosoma mauritianum (Pappenheim, 1914). – Taxonomy: First record from New Caledonia as *Leptocephalus Ariosoma mauritianum* by Castle (1964: 10–11). IRDNC material. – Distribution: NC: 1, [4], [5], 6, [7], 8, 9, 10, [11], [12], [13]; AU: 17. Depth: 360–800 m. Marine species.

Ariosoma scheelei (Strömmann, 1896). – Taxonomy: First record from New Caledonia as *Leptocephalus Ariosoma scheelei* by Castle (1966: 58, 68). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 9–55 m. Marine species.

Bathycongrus geminus (Castle, 1964). – Taxonomy: Originally described from New Caledonia as *Leptocephalus geminus* by Castle (1964: 32–34). CSIRO and MNHN material. This species may be a synonym of *Bathycongrus guttulatus* (Günther, 1887) and/or *Bathycongrus wallacei* (Castle, 1968) and/or *Bathycongrus odontostomus* (Fowler, 1934); see Castle & Smith (1999: 993). – Distribution: NC: 8, 14. Depth: 0–300 m. Marine species.

Bathycongrus guttulatus (Günther, 1887). – Taxonomy: First record from New Caledonia as *Rhechias guttulatus* by Rivaton et al. (1990: 36), and by Ben-Tuvia (1993: 360–361). MNHN material. – Distribution: NC: [5], [7], 13. Depth: 420–1270 m. Marine species.

**Bathycongrus trilineatus* (Castle, 1964). – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) as *Leptocephalus trilineatus* by Castle (1964: 32). – Distribution: NC: [4], [5], [6], [7], 8, [9], [10]. Depth: 50–400 m. Marine species.

Bathycongrus trimaculatus Karmovskaya & Smith, 2008. – Taxonomy: Recorded from New Caledonia in original description by Karmovskaya & Smith (2008: 27). MNHN material. – Distribution: NC: [5], [7], 15. Depth: 357–550 m. Marine species.

**Bathycongrus unimaculatus* Karmovskaya, 2009. – Taxonomy: Originally described from New Caledonia (southern Loyalty Basin) by Karmovskaya (2009: 149). MNHN material (holotype). – Distribution: NC: 14. Depth: 470–480 m. Marine species.

Bathymyrus echinorhynchus Alcock, 1889. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 36). – Distribution: NC: [4], [5], [7], 8. Depth: 300 m. Marine species.

Bathyuroconger vicinus (Vaillant, 1888). – Taxonomy: First record from New Caledonia by Eschmeyer & Fricke (2010); previously reported as *Leptocephalus mediopunctatus* by Castle (1964: 34–36). MNHN material. – Distribution: NC: [4], [5], [6], [7], 8, [9], [10]. Depth: 50–400 m. Marine species.

Blachea longicaudalis Karmovskaya, 2004. – Taxonomy: Recorded from New Caledonia in original description by Karmovskaya (2004: S23). MNHN material. – Distribution: NC: [5], [7], 8. Depth: 400–461 m. Marine species.

Conger cinereus (Rüppell, 1828) – Congre gris. – Taxonomy: First record from New Caledonia by Fowler (1928: 37–38); previously treated as *Conger* sp. by Jouan (1861: 251), and as *Conger marginatus* (non Valenciennes in Eydoux & Souleyet, 1850) by Jouan (1879: 333). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], 6, [7], 8, 9, 10, [11], [12], 14; AU: 17; NZ: 20. Depth: 0–80 m. Transitional water and marine.

Conger verreauxi Kaup, 1856. – Taxonomy: First record from New Caledonia by Castle (1964: 24–28). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12]; NZ: 21, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–45 m. Marine species.

Conger wilsoni (Bloch & Schneider [ex Banning], 1801). – Taxonomy: First record from New Caledonia by Castle (1964: 19–24). – Distribution: NC: [5], [6], [7], 8; AU: 17, 18; NZ: 20, 21, 23, 24, 25. Depth: 0–30 m. Transitional water and marine.

Gnathophis habenatus (Richardson, 1848). – Taxonomy: First record from New Caledonia by Castle (1966: 59, 69); previously reported as *Gnathophis habenatus ?longicaudus* by Castle (1963: 25–37). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17, [18]; NZ: 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–130 m. Marine species.

**Gnathophis neocaledoniensis* Karmovskaya, 2004. – Taxonomy: Originally described from New Caledonia by Karmovskaya (2004: S17); previously reported as *Gnathophis* sp. by Rivaton (1989: 147). MNHN material. – Distribution: NC: 1, 5. Depth: 295–520 m. Marine species.

Gnathophis umbrellabius (Whitley, 1946). – Taxonomy: First record from New Caledonia as *Gnathophis incognitus* by Castle (1963: 37–45). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17, [18]; NZ: 20, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 12–366 m. Marine species.

Heteroconger hassi (Klausewitz & Eibl-Eibesfeldt, 1959). – Taxonomy: First record from New Caledonia as *Taenioconger hassi* by Fourmanoir & Laboute (1976: 315); *Taenioconger hassi neocaledoniensis* of Castle (1967: 7–12) is a junior synonym. NMNZ and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 1–45 m. Marine species.

Heteroconger polyzona Bleeker, 1868. – Taxonomy: First record from New Caledonia by Evans (2006: 91). – Distribution: NC: [5], [6], [7], [8], [9], [10]. Depth: 1–10 m. Marine species.

Heteroconger tomberua Castle & Randall, 1999. – Taxonomy: Questionably recorded from New Caledonia in original description by Castle & Randall (1999: 28–29); record verified by Fricke & Kulbicki (2006: 319). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 2–36 m. Marine species.

Promyllantor adenensis (Klausewitz, 1991). – Taxonomy: First record from New Caledonia by Karmovskaya (2004: S2). – Distribution: NC: 2, [5], [7]. Depth: 2227–2325 m. Marine species.

Nettastomatidae

Nettastoma melanurum Rafinesque-Schmaltz, 1810. – Taxonomy: First record from New Caledonia by Castle (1966: 59, 69). – Distribution: NC: 4, [5], [7]; NZ: 19. Depth: 0–1647 m. Marine species.

Nettenchelys gephyra Castle & Smith in Smith, Böhlke & Castle, 1981. – Taxonomy: Originally described from New Caledonia by Castle & Smith in Smith et al. (1981: 553–555). MNHN material (holotype). – Distribution: NC: 4, [5], [7], 8. Depth: 0–412 m. Marine species.

Serrivomeridae

Serrivomer bertini Bauchot, 1959. – Taxonomy: First record from New Caledonia as *Leptocephalus Serrivomer bertini* by Castle (1966: 59, 69). – Distribution: NC: 4, [5], [7]. Depth: 0–1750 m. Marine species.

**Serrivomer neocaledoniensis* Bauchot, 1959. – Taxonomy: Originally described from New Caledonia by Bauchot (1959: 132, 135). ZMUC material (holotype). – Distribution: NC: 4, [5], [7]. Depth: 0–750 m. Marine species.

Serrivomer samoensis Bauchot, 1959. – Taxonomy: First record from New Caledonia as *Leptocephalus Serrivomer samoensis* by Castle (1966: 59, 69). – Distribution: NC: 4, [5], [7]. Depth: 0–2250 m. Marine species.

Serrivomer sector Garman, 1899. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 71). IRDNC material. – Distribution: NC: 4, [5], [7], 8. Depth: 0–3243 m. Marine species.

Stemonidium hypomelas Gilbert, 1905. – Taxonomy: First record from New Caledonia as *Leptocephalus Stemonidium hypomelas* by Castle (1966: 59, 69). – Distribution: NC: 4, [5], [7]. Depth: 500–1229 m. Marine species.

Eupharyngidae

Eurypharynx pelecanoides Vaillant, 1882. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 38) and Rivaton & Bourret (1999: 190). – Distribution: NC: 4, [5], [7]. Depth: 500–4000 m. Marine species.

Engraulidae

Encrasicholina devisi (Whitley, 1940) – Anchois doré. – Taxonomy: First record from New Caledonia as *Stolephorus devisi* by Conand (1985: 464). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–13 m. Transitional water and marine.

Encrasicholina heteroloba (Rüppell, 1837) – Anchois bleu. – Taxonomy: First record from New Caledonia as *Stolephorus heterolobus* by Conand (1985: 464). – Distribution: NC: [5], [6], [7], 8, [9], 10. Depth: 10–50 m. Marine species.

Encrasicholina punctifer Fowler, 1938 – Anchois du large. – Taxonomy: First record from New Caledonia as *Stolephorus punctifer* by Conand (1985: 464). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 5–35 m. Marine species.

Engraulis australis (White, 1790) – Khoda (Canala). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 319); previously treated as *Engraulis* sp. by Jouan (1861: 307), as *Engraulis indicus* (non Hasselt, 1823) by Fowler (1928: 33), and as *Engraulis japonicus* (non Temminck & Schlegel, 1846) by Fourmanoir (1971b: 110). – Distribution: NC: [5], [6], [7], [8], [9], [10]; AU: 17; NZ: 20, 23, 24, 25. Depth: 31–70 m. Marine species.

Stolephorus indicus (Hasselt, 1823) – Anchois blanc. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 110). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 20–50 m. Marine species.

Stolephorus insularis Hardenberg, 1933. – Taxonomy: First record from New Caledonia by Conand (1985: 464); previously treated as *Stolephorus tri* (non Bleeker, 1852) by Rivaton et al. (1990: 38). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–50 m. Transitional water and marine.

Stolephorus waitei Jordan & Seale, 1926 – Anchois d'estuaire. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 38) and Thollot (1996a: 7). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–50 m. Freshwater, transitional water and marine.

Thryssa baelama (Forsskål in Niebuhr, 1775) – Petit prêtre. – Taxonomy: First record from New Caledonia as *Thrissina baelama* by Conand (1985: 464). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], 10, 14. Depth: 0–50 m. Transitional water and marine.

Chirocentridae

Chirocentrus dorab (Forsskål in Niebuhr, 1775) – Sabre, harengloup. – Taxonomy: First record from New Caledonia as *Clupea dorab* by Jouan (1879: 335); previously reported as *Clupea* sp. by Jouan (1861: 306), and subsequently as *Neosudis vorax* by Castelnau (1873: 119) and as *Chirocentrus* sp. by Rivaton et al. (1990: 35). – Distribution: NC: 5, 6, 7, 8, 9, [10]. Depth: 0–120 m. Transitional water and marine.

Clupeidae

Amblygaster clupeoides Bleeker, 1849 – Sardinelle. – Taxonomy: First record from New Caledonia by Conand (1985: 464). – Distribution: NC: [5], [6], [7], 8, [9], 10. Depth: 0–50 m. Marine species.

Amblygaster sirm (Walbaum, 1792) – Sardinelle tâchetée. – Taxonomy: First record from New Caledonia by Conand (1985: 464). – Distribution: NC: 5, [6], [7], 8, [9], 10. Depth: 1–75 m. Transitional water and marine.

Anodontostoma chacunda (Hamilton, 1822) – Poisson gésier. – Taxonomy: First record from New Caledonia as *Chaetoessus chacunda* by Borodin (1932: 70). IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], [10]. Depth: 0–50 m. Freshwater, transitional water and marine.

Dussumieria elopsoides Bleeker, 1849 – Grand sprat. – Taxonomy: **New record** from New Caledonia; previously treated as *Dussumieria acuta* (non Valenciennes in Cuvier & Valenciennes, 1837) by Rivaton et al. (1990: 36) and Kulbicki et al. (1993: 27). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–50 m. Marine species.

Herklotsichthys quadrimaculatus (Rüppell, 1837) – Sardine. – Taxonomy: First record from New Caledonia by Conand (1985: 464). IRDNC, SMNS and USNM material. – Distribution: NC: [1], [5], [6], [7], 8, [9], 10, 14. Depth: 0–13 m. Transitional water and marine.

Nematalosa come (Richardson, 1846). – Taxonomy: First record from New Caledonia by Thollot & Kulbicki (1988: 614). Record needs additional verification; this species may have been confused with *Anodontostoma chacunda* (see above). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–13 m. Marine species.

Sardinella fijiense (Fowler & Bean, 1923). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1993: 27); previously reported as *Clupea sindensis* (non Day, 1878) by Borodin (1932: 70). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–50 m. Transitional water and marine.

Sardinella melanura (Cuvier, 1829) – Sardinelle à queue noire. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 36) and Kulbicki et al. (1993: 27). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–50 m. Transitional water and marine.

Spratelloides delicatulus (Bennett, 1832) – Sprat bleu. – Taxonomy: First record from New Caledonia as *Stolephorus delicatulus* by Plessis & Fourmanoir (1966c: 124). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12], 14; AU: [17], 18. Depth: 0–50 m. Transitional water and marine.

Spratelloides gracilis (Temminck & Schlegel, 1846) – Sprat argenté. – Taxonomy: First record from New Caledonia by Conand (1985: 464). SMNS material. – Distribution: NC: [1], 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17. Depth: 0–40 m. Marine species.

Chanidae

Chanos chanos (Forsskål in Niebuhr, 1775) – Chanos, poisson lait. – Taxonomy: First record from New Caledonia by Günther (1909: 387–388). AMS material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 18. Depth: 0–30 m. Freshwater, transitional water and marine.

Gonorynchidae

Gonorynchus greyi (Richardson, 1845). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 319); previously reported as *Gonorhynchus gonorhynchus* (non Linné, 1766) by Fourmanoir (1971b: 110), and as *Gonorynchus* sp. by Rivaton et al. (1990: 42). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18; NZ: 20, 23, 24, 25, 26, 27. Depth: 1–160 m. Freshwater, transitional water and marine.

Cyprinidae

Carassius auratus (Linnaeus, 1758) – Carassin doré, poisson rouge. – Taxonomy: Reported from New Caledonia by Marquet et al. (2003: 146–147). – Distribution: NC: 8, 9, 10. Introduced, not native. Freshwater species.

Cyprinus carpio Linnaeus, 1758 – Carpe commune. – Taxonomy: Reported from New Caledonia by Laboute & Grandperrin (2000: 72). – Distribution: NC: 8, 9, 10. Introduced, not native. Freshwater species.

Plotosidae

Plotosus lineatus (Thunberg, 1787) – Corde, poisson-chat. – Taxonomy: First record from New Caledonia by Rivaton (1989: 141); previously reported as *Silurus* sp. by Jouan (1861: 305), and as *Plotosus anguillaris* by Whitley (1961: 65). AMS, IRDNC and SMNS material. – Distribution: NC: 1, 5, [6], 7, 8, 9, [10], [11], [12], 14; AU: 17, 18. Depth: 1–35 m. Transitional water and marine.

Argentinidae

Glossanodon australis Kobyliansky, 1998. – Taxonomy: **New record** from New Caledonia; previously reported as *Glossanodon* sp. B by Rivaton et al. (1990: 25). – Distribution: NC: 4, [5], [7]; NZ: 22. Depth: 140–330 m. Marine species.

Glossanodon elongatus Kobyliansky, 1998. – Taxonomy: **New record** from New Caledonia; previously reported as *Glossanodon* sp. by Rivaton (1989: 147), and *Glossanodon* sp. A by Rivaton et al. (1990: 25). – Distribution: NC: 1, [5], [7]; NZ: 22. Depth: 322–365 m. Marine species.

Opisthoproctidae

Opisthoproctus grimaldii Zugmayer, 1911. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 58) and Rivaton & Bourret (1999: 194). – Distribution: NC: 4, [5], [7]. Depth: 0–775 m. Marine species.

Opisthoproctus soleatus Vaillant, 1888. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 58) and Rivaton & Bourret (1999: 194). – Distribution: NC: [5], [7], 14. Depth: 300–800 m. Marine species.

Rhynchohyalus natalensis (Gilchrist & Bonde, 1924). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 58) and Rivaton & Bourret (1999: 194). – Distribution: NC: 4, [5], [7]. Depth: 0–775 m. Marine species.

Microstomatidae

Nansenia pelagica Kawaguchi & Butler, 1984. – Taxonomy: **New record** from New Caledonia; previously reported as *Nansenia* sp. B by Rivaton et al. (1990: 27) and Rivaton & Bourret (1999: 194). IRDNC material. – Distribution: NC: 4, [5], [7], 8. Depth: 0–2000 m. Marine species.

Bathylagidae

Bathylagus pacificus Gilbert, 1890. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 27) and Rivaton & Bourret (1999: 192). – Distribution: NC: [5], [7], 14. Depth: 0–430 m. Marine species.

Bathylagus wesethi Bolin, 1939. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 27) and Rivaton & Bourret (1999: 192). IRDNC material. – Distribution: NC: 4, [5], [7]. Depth: 0–500 m. Marine species.

Platytroctidae

Platytroctes apus Günther, 1878. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 68) and Rivaton & Bourret (1999: 196). – Distribution: NC: 4, [5], [7]. Depth: 0–2000 m. Marine species.

Alepocephalidae

Photostylus pycnopterus Beebe, 1933. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 22) and Rivaton & Bourret (1999: 196). – Distribution: NC: 4, [5], [7]. Depth: 0–1000 m. Marine species.

Xenodermichthys copei (Gill, 1884). – Taxonomy: **New record** from New Caledonia; previously treated as *Xenodermichthys* sp. by Rivaton et al. (1990: 68) and Rivaton & Bourret (1999: 196). IRDNC material. – Distribution: NC: 4, [5], [7], 8. Depth: 0–880 m. Marine species.

Galaxiidae

**Galaxias neocaledonicus* Weber & Beaufort, 1913 – Galaxias. – Taxonomy: Originally described from New Caledonia (southern Grande Terre) by Weber & Beaufort (1913: 173–174). AMNH, AMS, IRDNC, MNHN, SMNS and ZMA material. – Distribution: NC: [5], [7], 9, 10. Depth: 0–5 m. Freshwater, transitional water and marine.

Gonostomatidae

Cyclothone acclinidens Garman, 1899. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42). IRDNC material. – Distribution: NC: 4, [5], [7]. Depth: 0–3500 m. Marine species.

Cyclothone alba Brauer, 1906. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Rivaton & Bourret (1999: 198). – Distribution: NC: 4, [5], [7]. Depth: 0–800 m. Marine species.

Cyclothone microdon (Günther, 1878). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Rivaton & Bourret (1999: 198). – Distribution: NC: 4, [5], [7]; NZ: 20, 22. Depth: 0–2700 m. Marine species.

Cyclothone pallida Brauer, 1902. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Rivaton & Bourret (1999: 198). – Distribution: NC: 4, [5], [7]; NZ: 23, 25. Depth: 0–1270 m. Marine species.

Cyclothone parapallida Badcock, 1982. – Taxonomy: First record from New Caledonia by Rivaton & Bourret (1999: 198). – Distribution: NC: 4, [5], [7]. Depth: 0–900 m. Marine species.

Cyclothone pseudopallida Mukhacheva, 1964. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42). – Distribution: NC: 4, [5], [7]. Depth: 0–900 m. Marine species.

Diplophos taenia Günther, 1873. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Rivaton & Bourret (1999: 200). – Distribution: NC: 4, [5], [7], 14; NZ: 23. Depth: 0–1080 m. Marine species.

Gonostoma atlanticum Norman, 1930. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Rivaton & Bourret (1999: 200). – Distribution: NC: 4, [5], [7]. Depth: 0–450 m. Marine species.

Gonostoma elongatum Günther, 1878. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Rivaton & Bourret (1999: 200). IRDNC material. – Distribution: NC: 4, [5], [7], 15; NZ: 23. Depth: 0–1050 m. Marine species.

Margrethia obtusirostra Jespersen & Tåning, 1919. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Rivaton & Bourret (1999: 204). – Distribution: NC: 4, [5], [7], 15. Depth: 0–500 m. Marine species.

Sigmops ebelingi (Grey, 1960). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Rivaton & Bourret (1999: 200). – Distribution: NC: 4, [5], [7]. Depth: 300–580 m. Marine species.

Sternoptychidae

Argyropelecus aculeatus Valenciennes in Cuvier & Valenciennes, 1850. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73) and Rivaton & Bourret (1999: 206). IRDNC material. – Distribution: NC: 4, [5], [7], 8; AU: 17. Depth: 150–500 m. Marine species.

Argyropelecus hemigymnus Cocco, 1829. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73) and Kulbicki et al. (1994: 11). – Distribution: NC: 4, [5], [7], [13], 14, [15]; AU: [17], [18]; NZ: [19], [20], [21], 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–580 m. Marine species.

Argyropelecus olfersii (Cuvier, 1829). – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 111,

116). IRDNC material. – Distribution: NC: 4, [5], [7], 8; NZ: 27. Depth: 100–800 m. Marine species.

Argyropelecus sladeni Regan, 1908. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73) and Rivaton & Bourret (1999: 208). IRDNC material. – Distribution: NC: 4, [5], [7], 8; AU: 18; NZ: 20. Depth: 100–420 m. Marine species.

Polyipnus aquavitus Baird, 1971. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73) and Rivaton & Bourret (1999: 208). IRDNC material. – Distribution: NC: 4, [5], [7], 14, 15; NZ: 22. Depth: 0–1000 m. Marine species.

Sternoptyx diaphana Hermann, 1791. – Taxonomy: First record from New Caledonia by Fourmanoir (1969: 52). IRDNC material. – Distribution: NC: 4, [5], [7], [13], 14, 15; AU: [17], [18]; NZ: 22, [23], [24], [25], [26], 27, 28, 29, 30. Depth: 0–1150 m. Marine species.

Sternoptyx obscura Garman, 1899. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73) and Rivaton & Bourret (1999: 212). IRDNC material. – Distribution: NC: [5], [7], 14. Depth: 0–400 m. Marine species.

Sternoptyx pseudobscura Baird, 1971. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73) and Rivaton & Bourret (1999: 212). – Distribution: NC: [5], [7]. Depth: 700–1050 m. Marine species.

Valenciennellus tripunctulatus (Esmark, 1871). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Kulbicki et al. (1994: 11). – Distribution: NC: 1, 4, [5], [7], 14. Depth: 0–500 m. Marine species.

Phosichthyidae

Ichthyococcus ovatus (Cocco, 1838). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Rivaton & Bourret (1999: 202). – Distribution: NC: 4, [5], [7], 8, 14. Depth: 0–500 m. Marine species.

Polymetme corythaeola (Alcock, 1898). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Kulbicki et al. (1994: 11). IRDNC material. – Distribution: NC: [5], [7]. Depth: 650–705 m. Marine species.

Vinciguerria nimbaria (Jordan & Williams in Jordan & Starks, 1895). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Rivaton & Bourret (1999: 202). – Distribution: NC: 4, [5], [7], 14, 15. Depth: 0–1070 m. Marine species.

Woodsia nonsuchae (Beebe, 1932). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Rivaton & Bourret (1999: 204). – Distribution: NC: 4, [5], [7], 8, 15. Depth: 0–600 m. Marine species.

Stomiidae

Astronesthes indicus Brauer, 1902. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 25) and Rivaton & Bourret (1999: 216). IRDNC material. – Distribution: NC: [5], [7], 15. Depth: 0–3000 m. Marine species.

Astronesthes lucifer Gilbert, 1905. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 110, 111). – Distribution: NC: [5], [7], 14. Depth: 25–704 m. Marine species.

Astronesthes splendidus Brauer, 1902. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 25) and Rivaton & Bourret (1999: 216). – Distribution: NC: 4, [5], [7], 8. Depth: 1–800 m. Marine species.

Bathophilus filifer (Garman, 1899). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 52) and Rivaton & Bourret (1999: 218). IRDNC material. – Distribution: NC: 4, [5], [7]. Depth: 0–1050 m. Marine species.

Bathophilus metallicus (Welsh, 1923). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 52) and Rivaton & Bourret (1999: 218). – Distribution: NC: [5], [7], 14. Depth: 0–4900 m. Marine species.

Chauliodus sloani Bloch & Schneider, 1801. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 34) and Rivaton & Bourret (1999: 214). IRDNC material. – Distribution: NC: 4, [5], [7], 8; NZ: 27. Depth: 0–1000 m. Marine species.

Echiostoma barbatum Lowe, 1843. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 52) and Rivaton & Bourret (1999: 218). IRDNC material. – Distribution: NC: 4, [5], [7], 8. Depth: 30–3000 m. Marine species.

Eustomias bifilis Gibbs, 1960. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 52) and Rivaton & Bourret (1999: 220). – Distribution: NC: 4, [5], [7]. Depth: 0–800 m. Marine species.

Eustomias cirritus Gibbs, Clarke & Gomon, 1983. – Taxonomy: Originally described from New Caledonia by Gibbs et al. (1983: 89, 93). ZMUC material. – Distribution: NC: [5], [7], 15. Depth: 0–337 m. Marine species.

Eustomias dinema Clarke, 1999. – Taxonomy: First record from New Caledonia in original description by Clarke (1999: 1005, 1006); previously listed as *Eustomias* sp. A by Rivaton et al. (1990: 52). IRDNC material. – Distribution: NC: 4, [5], [7]. Depth: 0–260 m. Marine species.

Eustomias vulgaris Clarke, 2001. – Taxonomy: First record from New Caledonia (Loyalty Islands) in original description by Clarke (2001: 687–688). IRDNC material. – Distribution: NC: [5], [7], 14. Depth: 0–750 m. Marine species.

Flagellostomias boureei (Zugmayer, 1913). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 52) and Rivaton & Bourret (1999: 220). – Distribution: NC: 4, [5], [7]. Depth: 0–3000 m. Marine species.

Grammatostomias dentatus Goode & Bean, 1896. – Taxonomy: **New record** from New Caledonia; previously listed as *Grammatostomias circularis* (non Morrow, 1959) by Rivaton et al. (1990: 52). – Distribution: NC: 4, [5], [7]. Depth: 0–3000 m. Marine species.

Heterophotus ophistoma Regan & Trewavas, 1929. – Taxonomy: First record from New Caledonia by Rivaton & Bourret (1999: 216). IRDNC material. – Distribution: NC: 4, [5], [7]. Depth: 70–1420 m. Marine species.

Idiacanthus fasciola Peters, 1877. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 44) and Rivaton & Bourret (1999: 224). IRDNC material. – Distribution: NC: 4, [5], [7], 14. Depth: 0–2000 m. Marine species.

Malacosteus australis Kenaley, 2007. – Taxonomy: Recorded from New Caledonia in original description by Kenaley (2007: 893–895). – Distribution: NC: [5], [7], 13. Depth: 500–2000 m. Marine species.

Malacosteus niger Ayres, 1848. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51) and Rivaton & Bourret (1999: 222). – Distribution: NC: 4, [5], [7]. Depth: 500–3000 m. Marine species.

Photonectes albipennis (Döderlein, 1882). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 52) and Rivaton & Bourret (1999: 222). – Distribution: NC: 4, [5], [7]. Depth: 0–800 m. Marine species.

Photonectes gracilis Goode & Bean, 1896. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 52) and Rivaton & Bourret (1999: 222). – Distribution: NC: 4, [5], [7]. Depth: 160–850 m. Marine species.

Photonectes margarita (Goode & Bean, 1896). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 52) and Rivaton & Bourret (1999: 222). – Distribution: NC: 4, [5], [7]. Depth: 0–3000 m. Marine species.

Photostomias tantillux Kenaley, 2009. – Taxonomy: **New record** from New Caledonia; previously reported as *Photostomias guernei* (non Collett, 1889) by Rivaton et al. (1990: 51) and Rivaton & Bourret (1999: 222). – Distribution: NC: 4, [5], [7], 8; AU: 17. Depth: 1138–3100 m. Marine species.

Rhadinesthes decimus (Zugmayer, 1911). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 25) and Rivaton & Bourret (1999: 218). – Distribution: NC: 4, [5], [7]; NZ: 27. Depth: 0–3000 m. Marine species.

Stomias nebulosus Alcock, 1889. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73) and Rivaton & Bourret (1999: 214). – Distribution: NC: 4, [5], [7], 8. Depth: 170–730 m. Marine species.

Thysanactis dentex Regan & Trewavas, 1930. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 52) and Rivaton & Bourret (1999: 222). – Distribution: NC: 4, [5], [7]; NZ: 22, 27. Depth: 0–1000 m. Marine species.

Ateleopodidae

Ateleopus japonicus Bleeker, 1853. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 25) and Kulbicki et al. (1994: 14). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 140–600 m. Marine species.

Paraulopidae

**Paraulopus legandi* (Fourmanoir & Rivaton, 1979). – Taxonomy: Originally described from New Caledonia (southeast of Île des Pins) as *Chlorophthalmus legandi* by Fourmanoir & Rivaton (1979: 407–408). MNHN material (holotype). – Distribution: NC: 4, [5], [7], 12. Depth: 360–415 m. Marine species.

Paraulopus melanogrammus Gomon & Sato, 2004. – Taxonomy: First record from New Caledonia (Saumarez Reef, East Coral Sea) in original description by Gomon & Sato (2004: 196–197). CSIRO material (paratype). – Distribution: NC: 1, [5], [7]. Depth: 303–320 m. Marine species.

Aulopidae

Hime japonica Günther, 1877. – Taxonomy: First record from New Caledonia as *Aulopus japonicus* by Fourmanoir & Rivaton (1979: 406). IRDNC material. – Distribution: NC: 1, 4, [5], [7], 12; NZ: 22, 23. Depth: 85–510 m. Marine species.

Synodontidae

Saurida gracilis (Quoy & Gaimard, 1824) – Anoli grele. – Taxonomy: First record from New Caledonia by Tollot & Kulbicki (1988: 618); previously reported as *Osmerus* sp. by Jouan (1861: 301). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14; AU: 17, 18. Depth: 0–135 m. Transitional water and marine.

Saurida longimanus Norman, 1939. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 74). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 100–280 m. Marine species.

Saurida nebulosa Valenciennes in Cuvier & Valenciennes, 1850 – Anoli nuageux. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 74) and Tollot & Kulbicki (1988: 618). IRDNC and SMNS material. – Distribution: NC: 5, 6, [7], 8, [9], 10, 14. Depth: 0–60 m. Transitional water and marine.

Saurida tumbil (Bloch, 1795) – Anoli tumbil. – Taxonomy: First record from New Caledonia by Russell (1999: 1940). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 10–60 m. Marine species.

Saurida undosquamis (Richardson, 1848) – Lézard des sables, gobie. – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS and IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10. Depth: 1–350 m. Marine species.

Synodus binotatus Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953 – Lézard à deux tâches. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 74) and Kulbicki & Wantiez (1990: 125). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], 6, [7], 8, 9, 10, 14. Depth: 1–88 m. Marine species.

Synodus dermatogenys Fowler, 1912 – Lézard rayé. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 74) and Wantiez (1992: 946); previously reported as *Synodus variegatus* (non Lacepède; 1803) by Fourmanoir (1971b: 111), and as *Synodus englemani* (non Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953) by Rivaton (1989: 141–142). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17, 18. Depth: 1–97 m. Transitional water and marine.

Synodus doaki Russell & Cressey, 1979. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 74) and Kulbicki et al. (1994: 12). IRDNC material. – Distribution: NC: 1, 5, [7]; AU: 18; NZ: 20, 23. Depth: 9–260 m. Marine species.

Synodus hoshinonis Tanaka, 1917 – Lézard à épaule noire. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 142). IRDNC material. – Distribution: NC: 1, 5, 6, [7], 8, [9], [10], [11], [12], 14; NZ: 23. Depth: 30–96 m. Marine species.

Synodus jaculum Russell & Cressey, 1979 – Anoli phare. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 74) and Kulbicki et al. (1994: 12). IRDNC and USNM material. – Distribution: NC: 1, 5, [7], 8, 14. Depth: 2–100 m. Marine species.

Synodus macrocephalus Cressey, 1981. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 147). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 51–250 m. Marine species.

Synodus oculeus Cressey, 1981. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 142, 147). – Distribution: NC: 1, [5], [7]. Depth: 44–96 m. Marine species.

Synodus rubromarmoratus Russell & Cressey, 1979. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Kulbicki et al. (1994: 12). – Distribution: NC: 1, [5], [7]. Depth: 5–50 m. Marine species.

Synodus similis McCulloch, 1921. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Kulbicki et al. (1994: 12). – Distribution: NC: 1, [5], [7], 8, [9], [10], [11], [12]; AU: 17, 18; NZ: 23. Depth: 25–76 m. Marine species.

Synodus tectus Cressey, 1981. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Kulbicki et al. (1994: 12); previously reported as *Synodus variegatus* (non Lacepède, 1803) by Rivaton (1989: 142). – Distribution: NC: 1, [5], [7], 8. Depth: 65–76 m. Marine species.

Synodus variegatus (Lacepède [ex Commerson], 1803) – Lézard varié, dard de rocher. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 12); previously reported as *Synodus englemani* by Thollot & Kulbicki (1988: 618). IRDNC and USNM material. – Distribution: NC: 1, [5], 6, 7, 8, 9, 10, [11], [12], 14; AU: 17, 18; NZ: 20. Depth: 2–121 m. Marine species.

Trachinocephalus myops (Bloch & Schneider [ex Forster], 1801) – Anoli serpent. – Taxonomy: First record from New Caledonia by Rivaton (1989: 143). IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18; NZ: 20. Depth: 3–90 m. Marine species.

Chlorophthalmidae

Chlorophthalmus albatrossis Jordan & Starks, 1904. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 147). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 300–350 m. Marine species.

Notosudidae

Ahliesaurus brevis Bertelsen, Krefft & Marshall, 1976. – Taxonomy: First record from New Caledonia in original description by Bertelsen et al. (1976: 27–31). – Distribution: NC: 16. Depth: 0–3000 m. Marine species.

Scopelosaurus meadi Bertelsen, Krefft & Marshall, 1976. – Taxonomy: First record from New Caledonia in original description by Bertelsen et al. (1976: 67; subsequently reported as *Scopelosaurus hoedti* (non Bleeker, 1860) by Rivaton et al. 1990: 57) and Rivaton & Bourret (1999: 226). IRDNC material. – Distribution: NC: 4, [5], [7], 8, 14, 15, 16; AU: 17; NZ: 20, 21, 22, 23, 24, 25, 26, 27, 28. Depth: 0–760 m. Marine species.

Ipnopidae

Bathypterois andriashevi Sulak & Shcherbachev, 1988. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 35). – Distribution: NC: [5], [7], 15. Depth: 0–970 m. Marine species.

Bathysauropsis malayanus (Fowler, 1938). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 35) and Rivaton & Bourret (1999: 224). IRDNC material. – Distribution: NC: 4, [5], [7], 12. Depth: 0–886 m. Marine species.

Scopelarchidae

Benthalbella infans Zugmayer, 1911. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 67) and Rivaton & Bourret (1999: 274). – Distribution: NC: 4, [5], [7]; NZ: 23. Depth: 0–3000 m. Marine species.

Scopelarchoides danae Johnson, 1974. – Taxonomy: First record from New Caledonia (Grande Terre) by Johnson (1974: 124–133). IRDNC material. – Distribution: NC: 4, [5], [7], 8. Depth: 0–1850 m. Marine species.

Scopelarchus analis (Brauer, 1902). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 67) and Rivaton & Bourret (1999: 276). – Distribution: NC: 4, [5], [7]; NZ: 20. Depth: 0–1600 m. Marine species.

Scopelarchus guentheri Alcock, 1896. – Taxonomy: First record from New Caledonia as *Scopelarchus guntheri* by Fourmanoir (1971b: 116). – Distribution: NC: 4, [5], [7]. Depth: 0–3000 m. Marine species.

Evermannellidae

Coccorella atlantica (Parr, 1928). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 38) and Rivaton & Bourret (1999: 274). – Distribution: NC: 4, [5], [7], 8. Depth: 50–1000 m. Marine species.

Evermannella indica Brauer, 1906. – Taxonomy: First record from New Caledonia by Johnson (1982: 136–145); misspelled *Evermannella incisa* by Rivaton et al. (1990: 38). – Distribution: NC: 4, [5], [7], 14, 15. Depth: 0–1050 m. Marine species.

Odontostomops normalops (Parr, 1928). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 38) and Rivaton & Bourret (1999: 274). IRDNC material. – Distribution: NC: 4, [5], [7]; NZ: 27. Depth: 0–1000 m. Marine species.

Alepisauridae

Alepisaurus brevirostris Gibbs, 1960 – Poisson lancette à nez court. – Taxonomy: First record from New Caledonia by Fourmanoir (1969: 52). – Distribution: NC: 1, 4, [5], [7]; NZ: 27. Depth: 0–1591 m. Marine species.

Alepisaurus ferox Lowe, 1833 – Poisson lancette à long nez. – Taxonomy: First record from New Caledonia by Fourmanoir (1969: 52). – Distribution: NC: 1, 4, [5], [7], [13], 14, 15; AU: 17, [18]; NZ: [20], [21], 23. Depth: 0–1830 m. Marine species.

Omosudidae

Omosudis lowii Günther, 1887. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 116). – Distribution: NC: 4, [5], [7]. Depth: 0–3000 m. Marine species.

Paralepididae

Arctozenus risso (Bonaparte, 1840). – Taxonomy: First record from New Caledonia as *Paralepis rissoi rissoi* by Ege (1953: 38). – Distribution: NC: 15; AU: 17; NZ: 20. Depth: 0–2200 m. Marine species.

Lestidiops indopacifica (Ege, 1953). – Taxonomy: First record from New Caledonia as *Lestidium indopacifica* in original description by Ege (1953: 120, 141). – Distribution: NC: 6, 8, 14, 16. Depth: 15–330 m. Marine species.

Lestidiops jayakari (Boulenger, 1889). – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 111, 116); previously reported as *Lestidium pseudosphyraenoides danae* by Ege (1953: 110); subsequently reported as *Lestidiops* sp. by Rivaton et al. (1990: 59) and Rivaton & Bourret (1999: 268). – Distribution: NC: 4, 5, 6, [7], 8, 10, 12, 13, 14, 15, 16; NZ: 20. Depth: 50–2000 m. Marine species.

Lestidiops mirabilis (Ege, 1933). – Taxonomy: First record from New Caledonia as *Lestidium mirabilis* by Ege (1953: 149). – Distribution: NC: 6, 14, 16. Depth: 30–825 m. Marine species.

Lestidiops pacificus (Parr, 1931). – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 116). – Distribution: NC: 4, [5], [7], 12. Depth: 50–2000 m. Marine species.

Lestidiops sphyraenopsis Hubbs, 1916. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 111). – Distribution: NC: 4, [5], [7]. Depth: 100–500 m. Marine species.

Lestidium atlanticum Borodin, 1928. – Taxonomy: First record from New Caledonia by Ege (1953: 141). – Distribution: NC: 4, [5], 6, [7], 8, 11, 12, 14, 16; NZ: 20. Depth: 50–1270 m. Marine species.

Lestrolepis intermedia (Poey, 1868). – Taxonomy: First record from New Caledonia as *Lestidium intermedium* by Ege (1953: 72). – Distribution: NC: 6. Depth: 35–1320 m. Marine species.

Macroparalepis affinis Ege, 1933. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 59) and Rivaton & Bourret (1999: 270). – Distribution: NC: [5], [7], 14. Depth: 0–2000 m. Marine species.

Macroparalepis danae Ege, 1933. – Taxonomy: First record from New Caledonia by Ege (1957: 90). – Distribution: NC: [5], [7], 14, 15, 16; AU: 17; NZ: 20, 27. Depth: 0–2000 m. Marine species.

Magnisudis indica (Ege, 1953). – Taxonomy: **New record** from New Caledonia; previously reported as *Paralepis brevis* (non Zugmayer, 1911) by Ege (1953: 27). – Distribution: NC: 6, 8, 15, 16; AU: 17, 18; NZ: 20. Depth: 0–2000 m. Marine species.

Stemonosudis elegans (Ege, 1933). – Taxonomy: First record from New Caledonia as *Macroparalepis elegans* by Ege (1957: 74). – Distribution: NC: 8, 15. Depth: 18–330 m. Marine species.

Stemonosudis macrura (Ege, 1933). – Taxonomy: First record from New Caledonia as *Macroparalepis macrura* by Ege (1957: 69). – Distribution: NC: 6, 8, 14, 16; AU: 17; NZ: 20 Depth: 18–330 m. Marine species.

Sudis atrox Rofen, 1963. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 59) and Rivaton & Bourret (1999: 272). IRDNC material. – Distribution: NC: 4, [5], [7], 8. Depth: 30–2250 m. Marine species.

Uncisudis sp. (to be described by Fukui & Ozawa). – Taxonomy: First record from New Caledonia by Fukui & Ozawa (2004: 292). – Distribution: NC: 2, [5], [7]. Depth: 0–2000 m. Marine species.

Giganturidae

Gigantura indica Brauer, 1901. – Taxonomy: First record from New Caledonia as *Bathyleptus lisae* by Rivaton et al. (1990: 39) and Rivaton & Bourret (1999: 224). – Distribution: NC: 4, [5], [7]. Depth: 17–2100 m. Marine species.

Neoscopelidae

Neoscopelus macrolepidotus Johnson, 1863. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 57) and Rivaton & Bourret (1999: 268). IRDNC material. – Distribution: NC: 4, [5], [7], 8, 14; NZ: 27. Depth: 0–1180 m. Marine species.

Myctophidae

Benthosema fibulatum (Gilbert & Cramer, 1897). – Taxonomy: First record from New Caledonia by Paxton & Hulley (1999: 1965). IRDNC material. – Distribution: NC: 4, [5], [7]. Depth: 0–2000 m. Marine species.

Benthosema suborbitale (Gilbert, 1913). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Paxton & Hulley (1999: 1965); previously treated as *Benthosema* sp. by Fourmanoir (1971b: 110, 111). IRDNC material. – Distribution: NC: 4, [5], [7], 14, 15. Depth: 50–2500 m. Marine species.

Bolinichthys longipes (Brauer, 1906). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 238). – Distribution: NC: 4, [5], [7], 14, 16. Depth: 50–725 m. Marine species.

Bolinichthys nikolayi Becker, 1978. – Taxonomy: First record from New Caledonia by Hulley & Duhamel (2009: 280–283, fig. 39). – Distribution: NC: [4], 8, 16. Depth: 25–1760 m. Marine species.

Bolinichthys photothorax (Parr, 1928). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 238). – Distribution: NC: 4, [5], [7], 8, 14. Depth: 40–830 m. Marine species.

Centrobranchus andreae (Lütken, 1892). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55, *Ceratobranchus a.*) and Rivaton & Bourret (1999: 228). – Distribution: NC: 4, [5], 6, [7], 8. Depth: 0–650 m. Marine species.

Centrobranchus nigroocellatus (Günther, 1873). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55, *Ceratobranchus n.*) and Rivaton & Bourret (1999: 228). – Distribution: NC: 4, [5], [7], 8. Depth: 0–700 m. Marine species.

Ceratoscopelus warmingii (Lütken, 1892). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 240). IRDNC material. – Distribution: NC: 4, [5], [7], 8; AU: 17; NZ: 20. Depth: 0–2014 m. Marine species.

Diaphus anderseni Tåning, 1932. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 240). – Distribution: NC: 4, [5], [7], 14. Depth: 0–560 m. Marine species.

Diaphus bertelseni Nafpaktitis, 1966. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 240). – Distribution: NC: 4, [5], [7], 8. Depth: 0–300 m. Marine species.

Diaphus brachycephalus Tåning, 1928. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 242). IRDNC material. – Distribution: NC: 4, [5], [7], 8, 15. Depth: 0–600 m. Marine species.

Diaphus chrysorhynchus Gilbert & Cramer, 1897. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 242). – Distribution: NC: 4, [5], [7], 8. Depth: 0–587 m. Marine species.

Diaphus coeruleus (Klunzinger, 1871). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Kulbicki et al. (1994: 12). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 0–549 m. Marine species.

Diaphus effulgens (Goode & Bean, 1896). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 244). – Distribution: NC: [5], [7], 15. Depth: 0–4000 m. Marine species.

Diaphus fragilis Tåning, 1928. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 244). IRDNC material. – Distribution: NC: 4, [5], [7], 8, 14, 15; AU: 17. Depth: 0–1313 m. Marine species.

Diaphus impostor Nafpaktitis, Robertson & Paxton, 1995. – Taxonomy: First record from New Caledonia in original description by Nafpaktitis et al. (1995: 336–339). – Distribution: NC: 4, [5], [7]. Depth: 0–140 m. Marine species.

Diaphus lucidus (Goode & Bean, 1896). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 246). IRDNC material. – Distribution: NC: 4, [5], [7], 14. Depth: 0–3000 m. Marine species.

Diaphus luetkeni (Brauer, 1904). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55). – Distribution: NC: 4, [5], [7]. Depth: 0–750 m. Marine species.

Diaphus malayanus Weber, 1913. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 246). IRDNC material. – Distribution: NC: 4, [5], [7], 8, 14. Depth: 0–2000 m. Marine species.

Diaphus metopoclampus (Cocco, 1829). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 246). IRDNC material. – Distribution: NC: [5], [7], 14, 16. Depth: 0–1085 m. Marine species.

Diaphus mollis Tåning, 1928. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 248). – Distribution: NC: 4, [5], [7], 14, 15. Depth: 0–600 m. Marine species.

Diaphus parri Tåning, 1932. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 248). – Distribution: NC: [5], [7], 14, 15, 16. Depth: 0–1071 m. Marine species.

Diaphus perspicillatus (Ogilby, 1898). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 248). IRDNC material. – Distribution: NC: 4, [5], [7], 8, 14; AU: 17; NZ: 21. Depth: 0–1500 m. Marine species.

Diaphus phillipsi Fowler, 1934. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 250). – Distribution: NC: 4, [5], [7], 14. Depth: 0–1330 m. Marine species.

Diaphus problematicus Parr, 1928. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 250). – Distribution: NC: 4, [5], [7], 8, 14. Depth: 0–820 m. Marine species.

Diaphus regani Tåning, 1932. – Taxonomy: Originally described from New Caledonia by Tåning (1932: 139). ZMUC material (holotype). – Distribution: NC: 4, [5], [7], 8. Depth: 0–750 m. Marine species.

Diaphus signatus Gilbert, 1908. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 252). IRDNC material. – Distribution: NC: 4, [5], [7]. Depth: 0–1270 m. Marine species.

Diaphus splendidus (Brauer, 1904). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 252). IRDNC material. – Distribution: NC: 4, [5], [7], 8. Depth: 0–3000 m. Marine species.

Diaphus termophilus Tåning, 1928. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 55) and Rivaton & Bourret (1999: 252). IRDNC material. – Distribution: NC: 4, [5], [7], 8, 15, 16. Depth: 0–850 m. Marine species.

Diogenichthys atlanticus (Tåning, 1928). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 230). – Distribution: NC: 4, [5], [7], 14; NZ: 20. Depth: 0–1050 m. Marine species.

Hygophum hygomii (Lütken, 1892). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 230). – Distribution: NC: 4, [5], [7], 14, 16; AU: 17; NZ: 23. Depth: 0–800 m. Marine species.

Hygophum reinhardtii (Lütken, 1892). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 230). – Distribution: NC: 4, [5], [7], 8, 14, 15; AU: 17. Depth: 0–1050 m. Marine species.

Lampadena luminosa (Garman, 1899). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 256). IRDNC material. – Distribution: NC: 4, [5], [7], 14. Depth: 0–1050 m. Marine species.

Lampadena urophaos Paxton, 1963. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 256). IRDNC material. – Distribution: NC: 4, [5], [7], 8, 14. Depth: 0–1000 m. Marine species.

Lampanyctus alatus Goode & Bean, 1896. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 258). – Distribution: NC: 4, [5], [7], 15. Depth: 0–1500 m. Marine species.

Lampanyctus festivus Tåning, 1928. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 258). IRDNC material. – Distribution: NC: 4, [5], [7], 14. Depth: 0–1052 m. Marine species.

Lampanyctus nobilis Tåning, 1928. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 258). IRDNC material. – Distribution: NC: 4, [5], [7], 8, 14. Depth: 0–1100 m. Marine species.

Lobianchia gemellarii (Cocco, 1838). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 260). – Distribution: NC: 4, [5], [7], 15. Depth: 25–800 m. Marine species.

Myctophum asperum Richardson, 1845. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 232). IRDNC material. – Distribution: NC: 4, [5], [7], 14, 15; AU: 17. Depth: 0–750 m. Marine species.

Myctophum nitidulum Garman, 1899. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 232). – Distribution: NC: 4, [5], [7], 14. Depth: 0–1000 m. Marine species.

Myctophum obtusirostre Tåning, 1928. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 234). – Distribution: NC: 4, [5], [7], 8, 15; AU: 17. Depth: 0–700 m. Marine species.

Myctophum selenops Tåning, 1928. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 234). IRDNC material. – Distribution: NC: 4, [5], [7]. Depth: 0–500 m. Marine species.

Myctophum spinosum (Steindachner, 1867). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 236). IRDNC material. – Distribution: NC: 4, [5], [7], 14; AU: 17. Depth: 0–700 m. Marine species.

Nannobrachium atrum (Tåning, 1928). – Taxonomy: First record from New Caledonia (West Fiji Basin) by Zahuranec (2000: 17–20). – Distribution: NC: [5], [7], 15, 16; AU: 17; NZ: 20, 23, 27. Depth: 60–1100 m. Marine species.

Nannobrachium nigrum Günther, 1887. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 236, *Lampanyctus niger*). – Distribution: NC: 4, [5], [7], 8; NZ: 20. Depth: 0–1050 m. Marine species.

Notolychnus valdiviae (Brauer, 1904). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 262). – Distribution: NC: [5], [7], 14. Depth: 0–700 m. Marine species.

Notoscopelus caudispinosus (Johnson, 1863). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 264). IRDNC material. – Distribution: NC: 4, [5], [7], 8. Depth: 0–360 m. Marine species.

Notoscopelus resplendens (Richardson, 1845). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 264). – Distribution: NC: [5], [7], 14, 15; AU: 17, 18; NZ: 23. Depth: 0–500 m. Marine species.

Symbolophorus evermanni (Gilbert, 1905). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 236). – Distribution: NC: 4, [5], [7], 8, 14. Depth: 0–500 m. Marine species.

Taaningichthys bathyphilus (Tåning, 1928). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 266). – Distribution: NC: 4, [5], [7], 14. Depth: 0–1550 m. Marine species.

Taaningichthys minimus (Tåning, 1928). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 266). – Distribution: NC: 4, [5], [7], 14. Depth: 0–1050 m. Marine species.

Triphoturus nigrescens (Brauer, 1904). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 56) and Rivaton & Bourret (1999: 264). – Distribution: NC: 4, [5], [7], 15. Depth: 0–1000 m. Marine species.

Veliferidae

Metavelifer multiradiatus (Regan, 1907). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 77) and Kulbicki et al. (1994: 14). IRDNC material. – Distribution: NC: 1, [5], [7]; AU: 17; NZ: 23. Depth: 40–240 m. Marine species.

Lampridae

Lampris guttatus (Brünnich, 1788) – Saumon des dieux. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 48) and Kulbicki et al. (1994: 14); previously reported as *Lampris regius* by Fourmanoir & Laboute (1976: 326). – Distribution: NC: 1, 4, [5], [6], [7], 8, [9], [10]; NZ: 27. Depth: 0–450 m. Marine species.

Stylephoridae

Stylephorus chordatus Shaw, 1801. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73) and Rivaton & Bourret (1999: 296). – Distribution: NC: 4, [5], [7]. Depth: 300–800 m. Marine species.

Trachipteridae

Zu cristatus (Bonelli, 1819). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 75) and Kulbicki et al. (1994: 14). – Distribution: NC: 1, [5], [7]. Depth: 0–950 m. Marine species.

Polymixiidae

Polymixia berndti Gilbert, 1905. – Taxonomy: First record from New Caledonia by Fourmanoir (1969: 56). IRDNC material. – Distribution: NC: [5], [7], 12, 14, [15]. Depth: 18–585 m. Marine species.

Polymixia japonica Günther, 1877. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 62) and Kulbicki et al. (1994: 15). IRDNC material. – Distribution: NC: 1, [5], [7], 12. Depth: 160–628 m. Marine species.

Bregmacerotidae

Bregmaceros sp. (cf. *macclellandi*). – Taxonomy: Reported from New Caledonia as *Bregmaceros macclellandi* (non Thompson, 1840) by Plessis & Fourmanoir (1966c: 124). This is apparently an undescribed species; *Bregmaceros mcclellandii* Thompson, 1840 is restricted to Arabian Sea, Bay of Bengal and Gulf of Thailand according to Torii et al. (2003). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–2000 m. Marine species.

Bregmaceros japonicus Tanaka, 1908. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 320). SMNS material. – Distribution: NC: [5], [7], 14. Depth: 0–800 m. Marine species.

Bregmaceros nectabanus Whitley, 1941. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 147–148). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 0–350 m. Marine species.

Bregmaceros rarisquamosus Munro, 1950. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 116). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–800 m. Marine species.

Euclichthyidae

Euclichthys polynemus McCulloch, 1926. – Taxonomy: First record from New Caledonia (Norfolk Ridge) by Roberts & Paulin (1997: 46–48). MNHN and NMNZ material. – Distribution: NC: [5], [7], 13; NZ: 23. Depth: 250–920 m. Marine species.

Macrouridae

Bathygadus sp. (cf. *spongiceps*). – Taxonomy: Reported from New Caledonia as *Bathygadus cottoides* (non Günther, 1878) by Iwamoto & Merrett (1997: 479–480). This is probably an undescribed species; Iwamoto & Graham (2001: 421) restricted *Bathygadus cottoides* to southern Australian, New Zealand and southern African populations. CAS and MNHN material. – Distribution: NC: [5], [7], 10, 13, 15. Depth: 900–1500 m. Marine species.

Coelorinchus sp. (cf. *cingulatus*). – Taxonomy: Reported from New Caledonia as *Caelorinchus cingulatus* (non Gilbert & Hubbs, 1920) by Iwamoto & Merrett (1997: 493–495); treated as *Caelorinchus* sp. cf. *cingulatus* by Iwamoto & Graham (2001: 442). BMNH, CAS and MNHN material. – Distribution: NC: [5], [7], 14. Depth: 250–550 m. Marine species.

Coelorinchus acutirostris Smith & Radcliffe, 1912. – Taxonomy: First record from New Caledonia (off southeastern Grande Terre) as *Caelorinchus acutirostris* by Iwamoto & Merrett (1997: 485–486). MNHN material. – Distribution: NC: [5], [6], [7], [8], 9, [10]. Depth: 291–320 m. Marine species.

Coelorinchus anatirostris Jordan & Gilbert, 1904. – Taxonomy: First record from New Caledonia as *Caelorinchus anatirostris* by Iwamoto & Merrett (1997: 486–489). BMNH and MNHN material. – Distribution: NC: 1, [5], [6], [7], [8], 9, [10], [11], 12. Depth: 300–550 m. Marine species.

Coelorinchus argentatus Smith & Radcliffe, 1912. – Taxonomy: First record from New Caledonia (off southeastern Grande Terre) as *Caelorinchus argentatus* by Iwamoto & Merrett (1997: 489–490). BMNH and MNHN material. – Distribution: NC: [5], [6], [7], [8], 9, [10]. Depth: 402–460 m. Marine species.

Coelorinchus celaenostomus McMillan & Paulin, 1993. – Taxonomy: First record from New Caledonia (Loyalty Ridge) as *Caelorinchus celaenostomus* by Iwamoto & Merrett (1997: 490–493). CAS and MNHN material. – Distribution: NC: [5], [7], 13, 15; NZ: 22, 23, 24. Depth: 600–975 m. Marine species.

**Coelorinchus cylindricus* Iwamoto & Merrett, 1997. – Taxonomy: Originally described from New Caledonia (Norfolk Ridge) as *Caelorinchus cylindricus* by Iwamoto & Merrett (1997: 495–496). MNHN material (holotype). – Distribution: NC: [5], [7], 13. Depth: 550–920 m. Marine species.

Coelorinchus kermadecus Jordan & Gilbert, 1904. – Taxonomy: First record from New Caledonia (Loyalty Ridge) as *Caelorinchus kermadeceus* by Iwamoto & Merrett (1997: 496–499). MNHN and NMNZ material. – Distribution: NC: [5], [7], 15; AU: [18]; NZ: [19], 20, [21], 23. Depth: 802–1152 m. Marine species.

**Coelorinchus melanobranchus* Iwamoto & Merrett, 1997. – Taxonomy: Originally described from New Caledonia as *Caelorinchus melanobranchus* by Iwamoto & Merrett (1997: 499–500); previously listed as *Coelorinchus* sp. A by Rivaton et al. (1990: 50). BMNH, CAS and MNHN material. – Distribution: NC: [5], [7], 12, 13. Depth: 405–530 m. Marine species.

Coelorinchus mycterismus McMillan & Paulin, 1993. – Taxonomy: First record from New Caledonia as *Caelorinchus mycterismus* by Iwamoto & Graham (2001: 452–453). – Distribution: NC: [5], [7], 13; AU: [18]; NZ: 19, 21, [22], 23, 24, 25, 26, 27. Depth: 833–1150 m. Marine species.

Coelorinchus parallelus (Günther, 1877). – Taxonomy: First record from New Caledonia (East Coral Sea) as *Caelorinchus parallelus* by Iwamoto & Merrett (1997: 500–502). CAS and MNHN material. – Distribution: NC: 1, [5], [7]. Depth: 412–990 m. Marine species.

Coelorinchus platorhynchus Smith & Radcliffe, 1912. – Taxonomy: First record from New Caledonia (off eastern Grande Terre) as *Caelorinchus platorhynchus* by Iwamoto & Merrett (1997: 502–503). MNHN material. – Distribution: NC: [5], [6], [7], [8], 9, [10]. Depth: 775–1033 m. Marine species.

Coelorinchus semaphoreus Iwamoto & Merrett, 1997. – Taxonomy: Originally described from New Caledonia (Grand Passage) as *Caelorinchus semaphoreus* by Iwamoto & Merrett (1997: 503–505); previously listed as *Coelorinchus* sp. B by Rivaton et al. (1990: 50). MNHN material (holotype). – Distribution: NC: 5, [7]. Depth: 420–445 m. Marine species.

**Coelorinchus sereti* Iwamoto & Merrett, 1997. – Taxonomy: Originally described from New Caledonia as *Caelorinchus sereti* by Iwamoto & Merrett (1997: 505–507); previously listed as *Coelorinchus* sp. C by Rivaton et al. (1990: 50). BMNH, CAS and MNHN material. – Distribution: NC: 1, [5], [6], [7], [8], 9, [10], 12, 14. Depth: 412–825 m. Marine species.

**Coelorinchus shcherbachevi* Iwamoto & Merrett, 1997. – Taxonomy: Originally described from New Caledonia (Loyalty Ridge) as *Caelorinchus shcherbachevi* by Iwamoto & Merrett (1997: 507–509); previously listed as *Coelorinchus* sp. D by Rivaton et al. (1990: 50). CAS, MNHN and NMNZ material. – Distribution: NC: [5], [7], 15. Depth: 797–835 m. Marine species.

Coelorinchus spathulatus McMillan & Paulin, 1993. – Taxonomy: First record from New Caledonia as *Caelorinchus spathulatus* by Iwamoto & Merrett (1997: 509–511). BMNH, CAS and MNHN material. – Distribution: NC: 1, [5], [7]; NZ: 19. Depth: 550–825 m. Marine species.

Coelorinchus trachycarus Iwamoto, McMillan & Shcherbachev, 1999. – Taxonomy: Originally described from New Caledonia (Norfolk Ridge) as *Caelorinchus trachycarus* by Iwamoto et al. (1999: 50–53). CAS material (holotype). – Distribution: NC: [5], [7], 13; AU: [18]; NZ: [19], [20], 21, 22, 23, 24, 25, 26, 27, 28, 29. Depth: 622–1730 m. Marine species.

Coryphaenoides dossenus McMillan, 1999. – Taxonomy: First record from New Caledonia by Iwamoto & Graham (2001: 460–461). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [13]; AU: [18]; NZ: [19], [20], 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 700–1600 m. Marine species.

Coryphaenoides striaturus Barnard, 1925. – Taxonomy: First record from New Caledonia by Iwamoto & Merrett (1997: 511–512); previously listed as *Coryphaenoides* sp. by

RIVATON et al. (1990: 50). BMNH and MNHN material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 13; AU: [18]; NZ: [19], [20], 21, 22, 23, 24, 25, 26. Depth: 823–2010 m. Marine species.

Gadomus introniger Gilbert & Hubbs, 1920. – Taxonomy: First record from New Caledonia (off Matthew Island) by IWAMOTO & MERRETT (1997: 480–481). MNHN material. – Distribution: NC: [5], [7], 16. Depth: 549–1280 m. Marine species.

Hymenocephalus aterrimus Gilbert, 1905. – Taxonomy: First record from New Caledonia by IWAMOTO & MERRETT (1997: 516–517). CAS, MNHN and NMNZ material. – Distribution: NC: [5], [7], 12, 13. Depth: 340–1463 m. Marine species.

Hymenocephalus gracilis Gilbert & Hubbs, 1920. – Taxonomy: First record from New Caledonia by IWAMOTO & MERRETT (1997: 518). BMNH, CAS, IRDNC, MNHN and NMNZ material. – Distribution: NC: 1, 2, [5], [6], [7], [8], 9, [10], 13. Depth: 300–450 m. Marine species.

Hymenocephalus kuronumai Kamohara, 1938. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by IWAMOTO & MERRETT (1997: 518–519). CAS and MNHN material. – Distribution: NC: 1, [5], [7]. Depth: 350–710 m. Marine species.

Hymenocephalus longibarbis (Günther, 1887). – Taxonomy: First record from New Caledonia by IWAMOTO & MERRETT (1997: 520–521). CAS, IRDNC, MNHN and NMNZ material. – Distribution: NC: [5], [6], [7], [8], 9, [10], 13, 15. Depth: 500–620 m. Marine species.

Hymenocephalus megalops Iwamoto & Merrett, 1997. – Taxonomy: First record from New Caledonia by IWAMOTO & MERRETT (1997: 521–523); previously listed as *Hymenocephalus longiceps* (non Smith & Radcliffe in Radcliffe, 1912) by RIVATON et al. (1990: 50). BMNH, CAS and MNHN material. – Distribution: NC: 1, [5], [6], [7], [8], [9], [10], [11], 12, 13. Depth: 600–825 m. Marine species.

Hymenocephalus nascens Gilbert & Hubbs, 1920. – Taxonomy: First record from New Caledonia by IWAMOTO & MERRETT (1997: 523–525). BMNH, MNHN and NMNZ material. – Distribution: NC: 1, [5], [6], [7], [8], [9], [10], [11], 12, 13. Depth: 183–855 m. Marine species.

Hymenocephalus nesaeae Merrett & Iwamoto, 2000. – Taxonomy: First recorded from New Caledonia in original description by MERRETT & IWAMOTO (2000: 759). – Distribution: NC: [5], [6], [7], [8], 9, [10]. Depth: 919–1000 m. Marine species.

Hymenocephalus striatissimus Jordan & Gilbert in Jordan & Starks, 1904. – Taxonomy: First record from New Caledonia by SAZONOV & IWAMOTO (1992: 62–63). ZMMU material. – Distribution: NC: 1, [5], [7]. Depth: 300–570 m. Marine species.

**Kumba musorstom* Merrett & Iwamoto, 2000. – Taxonomy: Originally described from New Caledonia (Norfolk Ridge) by MERRETT & IWAMOTO (2000: 762). MNHN material. – Distribution: NC: [5], [7], 13. Depth: 1098–1480 m. Marine species.

Kumba punctulata Iwamoto & Sazonov, 1994. – Taxonomy: Originally described from New Caledonia (Norfolk Ridge) by IWAMOTO & SAZONOV (1994: 233). MNHN material (holotype). – Distribution: NC: [5], [7], 13. Depth: 530–1000 m. Marine species.

**Lucigadus acrolophus* Iwamoto & Merrett, 1997. – Taxonomy: Originally described from New Caledonia by IWAMOTO & MERRETT (1997: 526–528). BMNH, CAS, IRDNC and MNHN material. – Distribution: NC: [5], [6], [7], [8], 9, [10], [11], 12, 13. Depth: 405–450 m. Marine species.

Lucigadus microlepis (Günther, 1878). – Taxonomy: First record from New Caledonia by IWAMOTO & MERRETT (1997: 528–532). BMNH, CAS, IRDNC, MNHN and NMNZ material. – Distribution: NC: [5], [6], [7], [8], 9, [10], [11], 12, 13, 15. Depth: 418–600 m. Marine species.

Malacocephalus laevis (Lowe, 1843). – Taxonomy: First record from New Caledonia by IWAMOTO & MERRETT (1997: 532–533). CAS, IRDNC and NMNZ material. – Distribution: NC: 1, [5], [7], 13. Depth: 300–700 m. Marine species.

Mataeocephalus acipenserinus (Gilbert & Cramer, 1897). – Taxonomy: First record from New Caledonia by IWAMOTO & MERRETT (1997: 533–534). CAS and MNHN material. – Distribution: NC: 1, [5], [6], [7], [8], 9, [10], 14. Depth: 600–1300 m. Marine species.

Mataeocephalus kotlyari Sazonov, Shcherbachev & Iwamoto, 2003. – Taxonomy: Originally described from New Caledonia by SAZONOV et al. (2003: 296–298); previously reported as *Mataeocephalus* sp. by IWAMOTO & MERRETT (1997: 534–535). BMNH, CAS and MNHN material. – Distribution: NC: 1, [5], [6], [7], [8], 9, [10], 14. Depth: 412–1000 m. Marine species.

**Nezumia aspidentata* Iwamoto & Merrett, 1997. – Taxonomy: Originally described from New Caledonia (Chesterfield Islands) by IWAMOTO & MERRETT (1997: 535–538). MNHN material (holotype). – Distribution: NC: 1, [5], [7]. Depth: 700–720 m. Marine species.

**Nezumia cliveri* Iwamoto & Merrett, 1997. – Taxonomy: Originally described from New Caledonia (Norfolk and Loyalty ridges) by IWAMOTO & MERRETT (1997: 539–540). CAS and MNHN material. – Distribution: NC: [5], [7], 13, 15. Depth: 815–1160 m. Marine species.

Nezumia coheni Iwamoto & Merrett, 1997. – Taxonomy: Originally described from New Caledonia by IWAMOTO & MERRETT (1997: 540–541). CAS and MNHN material. – Distribution: NC: [5], [7], 12, 13, 15; NZ: 20. Depth: 710–1032 m. Marine species.

Nezumia propinqua (Gilbert & Cramer, 1897). – Taxonomy: First record from New Caledonia by IWAMOTO & MERRETT (1997: 541–542). BMNH, CAS, MNHN and NMNZ material. – Distribution: NC: 1, [5], [7], 12, 13, 15. Depth: 390–1100 m. Marine species.

Nezumia spinosa (Gilbert & Hubbs, 1916). – Taxonomy: First record from New Caledonia by IWAMOTO & MERRETT (1997: 542–545). NMNZ material. – Distribution: NC: [5], [7], 13, 15. Depth: 787–823 m. Marine species.

Odontomacrurus murrayi Norman, 1939. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 51) and RIVATON & BOURRET (1999: 284). – Distribution: NC: [5], [6], [7], 8, [9], [10]; NZ: 27. Depth: 0–900 m. Marine species.

Pseudonezumia parvipes (Smith & Radcliffe, 1912). – Taxonomy: First record from New Caledonia by IWAMOTO & MERRETT (1997: 545–547). MNHN material. – Distribution: NC: [5], [7], 12. Depth: 1992–2308 m. Marine species.

Pseudonezumia pusilla (Sazonov & Shcherbachev, 1982). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Iwamoto & Merrett (1997: 547–548). MNHN material. – Distribution: NC: [5], [7], 14. Depth: 1380–2000 m. Marine species.

Sphagemacrurus pumiliceps (Alcock, 1894). – Taxonomy: First record from New Caledonia by Iwamoto & Merrett (1997: 549–550). BMNH, CAS and MNHN material. – Distribution: NC: 1, [5], [7], 12, 13, 14. Depth: 825–1880 m. Marine species.

Squalogadus modificatus Gilbert & Hubbs, 1916. – Taxonomy: First record from New Caledonia by Iwamoto & Merrett (1997: 480–483). MNHN material. – Distribution: NC: [5], [7], 9, 12; AU: 18. Depth: 800–2110 m. Marine species.

Trachonurus sentipellis Gilbert & Cramer, 1897. – Taxonomy: First record from New Caledonia by Iwamoto & Merrett (1997: 551–552). CAS and MNHN material. – Distribution: NC: 1, [5], [6], [7], [8], 9, [10], [11], 12, 14, 16. Depth: 500–1136 m. Marine species.

Ventrifossa atherodon (Gilbert & Cramer, 1897). – Taxonomy: First record from New Caledonia by Iwamoto & Merrett (1997: 554–556). BMNH, CAS, MNHN and NMNZ material. – Distribution: NC: 1, [5], [7], 12, 14, 15. Depth: 650–825 m. Marine species.

Ventrifossa johnboborum Iwamoto, 1982. – Taxonomy: First record from New Caledonia by Iwamoto & Merrett (1997: 556–557). BMNH, CAS, MNHN and NMNZ material. – Distribution: NC: 1, [5], [7], 12, 15. Depth: 421–850 m. Marine species.

Ventrifossa macropogon Marshall, 1973. – Taxonomy: First record from New Caledonia by Iwamoto & Merrett (1997: 557–559). BMNH, CAS, MNHN and NMNZ material. – Distribution: NC: [5], [7], 9, [10], 12, 15. Depth: 675–833 m. Marine species.

Ventrifossa nigrodorsalis Gilbert & Hubbs, 1920. – Taxonomy: First record from New Caledonia by Iwamoto & Merrett (1997: 559–562). BMNH, CAS and MNHN material. – Distribution: NC: 1, [5], [7], 13, 14. Depth: 300–855 m. Marine species.

Ventrifossa paxtoni Iwamoto & Williams, 1999. – Taxonomy: First record from New Caledonia by Iwamoto & Graham (2001: 499); previously reported as *Ventrifossa* species (NSW) by Iwamoto & Merrett (1997: 564–565). BMNH, CAS and MNHN material. – Distribution: NC: 1, [5], [7], 12. Depth: 760–1100 m. Marine species.

**Ventrifossa vinolenta* Iwamoto & Merrett, 1997. – Taxonomy: Originally described from New Caledonia (East Coral Sea) by Iwamoto & Merrett (1997: 562–564). BMNH, CAS and MNHN material. – Distribution: NC: 1, [5], [7]. Depth: 725–845 m. Marine species.

Moridae

**Gadella brocca* Paulin & Roberts, 1997. – Taxonomy: Originally described from New Caledonia (Norfolk Ridge) by Paulin & Roberts (1997: 20–22). MNHN material. – Distribution: NC: [5], [7], 8, [9], [10], [11], [12], 13. Depth: 425–790 m. Marine species.

Gadella jordani (Böhlke & Mead, 1951). – Taxonomy: First record from New Caledonia as *Gadella norops* by Paulin (1987: 75–76). MNHN and USNM material. – Distribution: NC: [5], [7], 8, [9], [10], [11], [12], 13. Depth: 200–750 m. Marine species.

Laemonema filodorsale Okamura, 1982. – Taxonomy: First record from New Caledonia by Paulin & Roberts (1997: 24–25). NMNZ material. – Distribution: NC: [5], [7], 13. Depth: 336–710 m. Marine species.

Laemonema palauense Okamura, 1982. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 52) and Paulin & Roberts (1997: 24–25). MNHN material. – Distribution: NC: [5], [6], [7], [8], 9, [10], [11], [12], 13, 14. Depth: 210–753 m. Marine species.

Laemonema robustum Johnson, 1862. – Taxonomy: First record from New Caledonia by Meléndez C. & Markle (1997: 634–636), previously reported as *Laemonema* sp. by Fourmanoir & Rivaton (1979: 416). – Distribution: NC: [5], [7], 10. Depth: 540–1200 m. Marine species.

Lepidion inosimae (Günther, 1887). – Taxonomy: First record from New Caledonia by Paulin & Roberts (1997: 27–28). MNHN material. – Distribution: NC: [5], [7], 15; NZ: 21, 22, 23, 24, 25, 26, 27, 28. Depth: 580–1100 m. Marine species.

Mora moro (Risso, 1810). – Taxonomy: First record from New Caledonia by Paulin & Roberts (1997: 29–30). MNHN material. – Distribution: NC: [5], [7], 13, 15; NZ: 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 450–2500 m. Marine species.

Physiculus longifilis Weber, 1913. – Taxonomy: First record from New Caledonia by Paulin & Roberts (1997: 30–31). MNHN material. – Distribution: NC: [5], [7], [9]. Depth: 250–320 m. Marine species.

Physiculus luminosus Paulin, 1983. – Taxonomy: First record from New Caledonia by Rivaton & Bourret (1999: 278). MNHN material. – Distribution: NC: [5], 6, [7], 8, [11], [12], [13]; NZ: 23. Depth: 130–640 m. Marine species.

Physiculus roseus Alcock, 1891. – Taxonomy: First record from New Caledonia by Paulin & Roberts (1997: 33–34). MNHN material. – Distribution: NC: [5], 6, [7]. Depth: 300–510 m. Marine species.

Physiculus therosideros Paulin, 1987. – Taxonomy: First record from New Caledonia in original description by Paulin (1987: 76–77); previously reported as *Physiculus peregrinus* (non Günther, 1872) by Fourmanoir & Rivaton (1979: 416). MNHN and NMNZ material. – Distribution: NC: 1, [5], [7], 8, [10], [11], 12, 13; AU: [18]; NZ: 20. Depth: 83–610 m. Marine species.

Tripterophycis svetovidovi Sazonov & Shcherbachev, 1986. – Taxonomy: First record from New Caledonia by Paulin & Roberts (1997: 37–39). MNHN and NMNZ material. – Distribution: NC: [5], [7], 13. Depth: 385–950 m. Marine species.

Carapidae

Carapus mourlani (Petit, 1934). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 170) and Myers (1999: 65). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–150 m. Marine species.

Echiodon coheni Williams, 1984. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 170) and Markle in Nielsen et al. (1999: 14). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 75–175 m. Marine species.

Encheliophis gracilis (Bleeker, 1856). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 32, 170) and Kulbicki et al. (1994: 13). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 1–62 m. Marine species.

Encheliophis homei (Richardson, 1846). – Taxonomy: First record from New Caledonia as *Fierasfer homei* by Jouan (1879: 333–334). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 0–30 m. Marine species.

Encheliophis vermicularis Müller, 1842. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 170) and Myers (1999: 66). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–5 m. Marine species.

Onuxodon fowleri (Smith, 1955). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 170) and Laboute & Grandperrin (2000: 123); previously reported as *Fierasfer* sp. by Jouan (1861: 252–253) and as *Carapus margaritiferae* (non Rendahl, 1921) by Fourmanoir & Laboute (1976: 315). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12]; NZ: 20. Depth: 1–30 m. Marine species.

Onuxodon parvibrachium (Fowler, 1927). – Taxonomy: First record from New Caledonia as *Anuxodon parvibrachium* by Plessis & Fourmanoir (1966c: 141). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–30 m. Marine species.

Pyramodon ventralis Smith & Radcliffe, 1913. – Taxonomy: First record from New Caledonia by Nielsen (1997: 53–54). MNHN material. – Distribution: NC: [5], [7]. Depth: 184–470 m. Marine species.

Ophidiidae

Acanthonus armatus Günther, 1878. – Taxonomy: First record from New Caledonia by Nielsen (1997: 54). MNHN and ZMUC material. – Distribution: NC: [4], [5], [7], [9]. Depth: 1500–2100 m. Marine species.

Alcockia rostrata (Günther, 1887). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Nielsen (1997: 55). MNHN material. – Distribution: NC: [5], [7], 14. Depth: 3300–4040 m. Marine species.

Bassogigas gillii Goode & Bean, 1896. – Taxonomy: First record from New Caledonia by Nielsen in Nielsen et al. (1999: 54–55). – Distribution: NC: 4, [5], [7]. Depth: 1060–2150 m. Marine species.

Bassozetus galatheae Nielsen & Merrett, 2000. – Taxonomy: First record from New Caledonia (Grande Terre) in original description by Nielsen & Merrett (2000: 26–30); previously reported as *Bassozetus elongatus* (non Smith & Radcliffe, 1913) by Nielsen (1997: 56). MNHN material. – Distribution: NC: [5], [7], 8, 10. Depth: 1100–2340 m. Marine species.

Bassozetus glutinosus (Alcock, 1890). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Nielsen (1997: 56–57). MNHN material. – Distribution: NC: [5], [7], 8, 10, 14. Depth: 1500–2040 m. Marine species.

Bassozetus robustus Smith & Radcliffe, 1913. – Taxonomy: First record from New Caledonia by Nielsen (1997: 57). MNHN material. – Distribution: NC: 4, [5], [7], 12, 13. Depth: 1332–2350 m. Marine species.

**Bassozetus werneri* Nielsen & Merrett, 2000. – Taxonomy: Originally described from New Caledonia (southern Loyalty Basin) by Nielsen & Merrett (2000: 51). MNHN material (holotype). – Distribution: NC: [5], [7], 13. Depth: 1862–1846 m. Marine species.

Bathyonus caudalis (Garman, 1899). – Taxonomy: First record from New Caledonia by Nielsen (1997: 58). MNHN and ZMUC material. – Distribution: NC: [5], [7], 12, 13, 14. Depth: 1500–3680 m. Marine species.

Brotula multibarbata Temminck & Schlegel, 1846 – Anguille barbue. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 315). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–650 m. Marine species.

Brotula townsendi Fowler, 1900. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 12). IRDNC and USNM material. – Distribution: NC: [5], [7], 14. Depth: 0–100 m. Marine species.

Dicrolene longimana Smith & Radcliffe in Radcliffe, 1913. – Taxonomy: First record from New Caledonia by Nielsen (1997: 59); listed as *Dicrolene* sp. by Rivaton et al. (1990: 58), and as *Dicrolene* sp. C by Rivaton & Bourret (1999: 286). MNHN and ZMUC material. – Distribution: NC: 1, 4, [5], [7], 8. Depth: 410–1410 m. Marine species.

Epetriodus freddyi Cohen & Nielsen, 1978. – Taxonomy: First record from New Caledonia by Nielsen in Nielsen et al. (1999: 64). – Distribution: NC: 4, [5], [7]. Depth: 100–1750 m. Marine species.

Homostolus acer Smith & Radcliffe in Radcliffe, 1913. – Taxonomy: First record from New Caledonia by Nielsen in Nielsen et al. (1999: 68); previously reported as *Homostolus japonicus* by Nielsen (1997: 59–60). MNHN and ZMUC material. – Distribution: NC: 1, [5], [7]. Depth: 300–1000 m. Marine species.

Monomitopus garmani (Smith & Radcliffe in Radcliffe, 1913). – Taxonomy: First record from New Caledonia by Nielsen (1997: 60–61); previously listed as *Monomitopus* sp. by Rivaton et al. (1990: 58). MNHN, NMNZ and ZMUC material. – Distribution: NC: 1, 4, [5], [7], 12, 13. Depth: 825–1220 m. Marine species.

Neobythites bimaculatus Nielsen, 1997. – Taxonomy: Originally described from New Caledonia (Grande Terre) by Nielsen (1997: 62–63). MNHN and ZMUC material. – Distribution: NC: [5], [7], 9. Depth: 435–480 m. Marine species.

**Neobythites bimarginatus* Fourmanoir & Rivaton, 1979. – Taxonomy: Originally described from New Caledonia by Fourmanoir & Rivaton (1979: 416–417). MNHN material. – Distribution: NC: 1, [5], [7], 12, 13, 14. Depth: 295–530 m. Marine species.

Neobythites longiventralis Nielsen, 1997. – Taxonomy: Originally described from New Caledonia (Grand Passage) by Nielsen (1997: 66–67). MNHN material. – Distribution: NC: [5], [7]. Depth: 205–330 m. Marine species.

Neobythites neocaledoniensis Nielsen, 1997. – Taxonomy: Originally described from New Caledonia by Nielsen (1997: 67–68). MNHN, NMNZ and ZMUC material. – Distribution: NC: [5], [6], [7], [8], [9], [10], [11], [12], 13. Depth: 470–670 m. Marine species.

Neobythites pallidus Nielsen, 1997. – Taxonomy: Originally described from New Caledonia by Nielsen (1997: 68–71).

MNHN and ZMUC material. – Distribution: NC: [5], [6], [7], [8], 9. Depth: 500–620 m. Marine species.

Neobythites unimaculatus Smith & Radcliffe in Radcliffe, 1913. – Taxonomy: First record from New Caledonia by Nielsen (1997: 71–72). MNHN material. – Distribution: NC: [5], [6], [7], [8], 9. Depth: 111–567 m. Marine species.

Neobythites zonatus Nielsen, 1997. – Taxonomy: Originally described from New Caledonia by Nielsen (1997: 72–73). MNHN, NMNZ and ZMUC material. – Distribution: NC: 1, [5], [6], [7], [8], 9, [10], [11], [12], 13, 14. Depth: 275–950 m. Marine species.

Ophidion muraenolepis (Günther, 1880). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 148). MNHN material. – Distribution: NC: 1, [5], [7]. Depth: 80–250 m. Marine species.

Porogadus melampeplus (Alcock, 1896). – Taxonomy: First record from New Caledonia by Nielsen (1997: 75). MNHN material. – Distribution: NC: 4, [5], [7]. Depth: 150–2400 m. Marine species.

Pycnocraspedum squamipinne Alcock, 1889. – Taxonomy: First record from New Caledonia by Nielsen (1997: 76). MNHN material. – Distribution: NC: 4, [5], [7]. Depth: 200–500 m. Marine species.

Tauredophidium hextii Alcock, 1890. – Taxonomy: First record from New Caledonia by Nielsen (1997: 77). MNHN material. – Distribution: NC: [5], [7], 9, 12. Depth: 1500–1660 m. Marine species.

Bythitidae

Alionematichthys piger (Alcock, 1890). – Taxonomy: First record from New Caledonia by Møller & Schwarzhans (2008: 102). BPBM, MNHN, ROM, SMNS and USNM material. – Distribution: NC: [5], [7], 9, 14. Depth: 0–10 m. Marine species.

Alionematichthys riukiuensis (Aoyagi, 1954). – Taxonomy: First record from New Caledonia as *Dinematichthys riukiuensis* by Fricke & Kulbicki (2006: 320). BPBM, MNHN and SMNS material. – Distribution: NC: [5], [7], 9, 14. Depth: 0–10 m. Marine species.

Diancistrus brevirostris Schwarzhans, Møller & Nielsen, 2005. – Taxonomy: Originally described from New Caledonia by Schwarzhans et al. (2005: 103–105); previously reported as *Brosmophyciops pautzkei* (non Schultz in Schultz et al., 1960) by Kulbicki & Williams (1997: 12, part, Ouvéa, Loyalty Islands). SMNS and USNM material. – Distribution: NC: [5], [7], 14. Depth: 0–10 m. Marine species.

Diancistrus longifilis Ogilby, 1899. – Taxonomy: First record from New Caledonia by Schwarzhans et al. (2005: 126–129). BPBM, MNHN and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12], 14; AU: 17, 18. Depth: 0–10 m. Marine species.

Diancistrus tongaensis Schwarzhans, Møller & Nielsen, 2005. – Taxonomy: First record from New Caledonia by Schwarzhans et al. (2005: 149–151); previously listed as *Brosmophyciops pautzkei* (non Schultz in Schultz et al., 1960) by Rivaton et al. (1990: 30). USNM material. – Distribution: NC: [5], [7], 14. Depth: 0–10 m. Marine species.

**Didymothallus pruvosti* Schwarzhans & Møller, 2007. – Taxonomy: Originally described from New Caledonia (Grande Terre) by Schwarzhans & Møller (2007: 61–63). MNHN and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], 10. Depth: 0–10 m. Marine species.

Dinematichthys iluocoeteoides Bleeker, 1855. – Taxonomy: First record from New Caledonia by Møller & Schwarzhans (2008: 129); previously treated as *Dinematichthys riukiuensis* (non Aoyagi, 1954) and *D. randalli* by Kulbicki & Williams (1997: 12). MNHN, USNM and WAM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–10 m. Marine species.

**Lapitaichthys frickei* Schwarzhans & Møller, 2007. – Taxonomy: Originally described from New Caledonia by Schwarzhans & Møller (2007: 73–75). MNHN, NMNZ, SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–10 m. Marine species.

Aphyonidae

Aphyonus bolini Nielsen, 1974. – Taxonomy: First record from New Caledonia (Île des Pins) by Nielsen (1997: 78). MNHN material. – Distribution: NC: [5], [7], 12, 13. Depth: 1075–1300 m. Marine species.

Aphyonus gelatinosus Günther, 1878. – Taxonomy: First record from New Caledonia (Île des Pins) by Nielsen (1997: 78–79). MNHN material. – Distribution: NC: [5], [7], 12, 13. Depth: 900–2560 m. Marine species.

**Parasciadonus pauciradiatus* Nielsen, 1997. – Taxonomy: Originally described from New Caledonia (Loyalty Islands) by Nielsen (1997: 79–80). MNHN material (holotype). – Distribution: NC: [5], [7], 14. Depth: 3680–3700 m. Marine species.

Lophiidae

Lophiomus setigerus (Vahl, 1797) – Baudroie bouche noire. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 148). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 215–510 m. Marine species.

Antennariidae

Antennarius coccineus (Cuvier in Lesson, 1831). – Taxonomy: First record from New Caledonia by Whitley (1958: 49–50); subsequently described as *Abantennarius neocaledoniensis* by Danois (1964: 126). AMS, BPBM, MNHN and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–104 m. Marine species.

Antennarius commerson (Anonymus [ex Commerson, ex Lacepède], 1798) – Poisson pecheur de Commerson. – Taxonomy: First record from New Caledonia as *Antennarius commersoni* by Rivaton et al. (1990: 22) and Kulbicki et al. (1994: 13); also treated as *Antennarius moluccensis* by Rivaton (1989: 143), and as *Antennarius* sp. 1, sp. 2 and sp. 3 by Laboute & Grandperrin (2000: 131). SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 0–45 m. Marine species.

Antennarius duescus Snyder, 1904. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 12). USNM material. – Distribution: NC: [5], [7], 14. Depth: 27–137 m. Marine species.

Antennarius hispidus (Bloch & Schneider, 1801). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki

(2006: 321). SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–90 m. Marine species.

Antennarius maculatus (Desjardins, 1840). – Taxonomy: First record from New Caledonia by Tholloт (1996a: 8). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–12 m. Marine species.

Antennarius nummifer (Cuvier, 1817). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 22) and Kulbicki et al. (1994: 13). USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12], 14; AU: 17; NZ: 23. Depth: 0–293 m. Marine species.

Antennarius pictus (Shaw in Shaw & Nodder, 1794). – Taxonomy: First record from New Caledonia by Pietsch & Grobecker (1987: 79–81); previously reported as *Antennarius phymatodes* (non Bleeker, 1857) by Whitley (1961: 64). AMS, IRDNC, SMNS and UW material. – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12], 14; AU: 17, 18. Depth: 0–75 m. Marine species.

Antennarius rosaceus Smith & Radcliffe in Radcliffe, 1912. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 321). SMNS material. – Distribution: NC: [5], [7], 14; AU: 17. Depth: 0–130 m. Marine species.

Antennarius striatus (Shaw in Shaw & Nodder, 1794) – Poisson pecheur zèbré. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 23) and Kulbicki et al. (1994: 13); also treated as *Phrynelox zebrinus* and *P. tridens* by Kulbicki & Wantiez (1990: 125). IRDNC, SMNS and UW material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], [12], 14; NZ: 23, 25. Depth: 0–219 m. Marine species.

Antennatus tuberosus (Cuvier, 1817). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 321); previously treated as *Antennarius* sp. 4 by Laboute & Grandperrin (2000: 132). SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–73 m. Marine species.

Histrio histrio (Linnaeus, 1758) – Sargasse. – Taxonomy: First record from New Caledonia as *Pterophrynoides histrio* by Whitley (1961: 65). AMS and SMNS material. – Distribution: NC: [1], [4], [5], [6], [7], 8, [9], [10], [14]; AU: [17], [18]; NZ: [20], [21], [22], 23. Depth: 0–600 m. Marine species.

Chaunacidae

Chaunax fimbriatus Hilgendorf, 1879. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 148). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 500–1985 m. Marine species.

Chaunax nudiventer Ho & Shao, 2010. – Taxonomy: Reported from New Caledonia (Norfolk Ridge) in original description by Ho & Shao (2010). MNHN material. – Distribution: NC: 13; AU: 18. Depth: 282–1089 m. Marine species.

Ogcocephalidae

Halicmetus reticulatus Smith & Radcliffe in Radcliffe, 1912. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 57) and Kulbicki et al. (1994: 13). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 291–500 m. Marine species.

Halieutaea stellata (Vahl, 1797). – Taxonomy: First record from New Caledonia by Rivaton (1989: 148) and Rivaton & Bourret (1999: 292). IRDNC and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 50–400 m. Marine species.

Halieutopsis stellifera (Smith & Radcliffe in Radcliffe, 1912). – Taxonomy: First record from New Caledonia (Île des Pins) as *Dibranchus stellifer* by Fourmanoir & Rivaton (1979: 424). IRDNC material. – Distribution: NC: [5], [7], 12. Depth: 410–1372 m. Marine species.

Malthopsis annulifera Tanaka, 1908. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 58) and Kulbicki et al. (1994: 13). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 305–590 m. Marine species.

Malthopsis lutea Alcock, 1891. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 58) and Kulbicki et al. (1994: 13). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 100–500 m. Marine species.

Solocisquama stellulata (Gilbert, 1905). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 57). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 274–550 m. Marine species.

Himantolophidae

Himantolophus cornifer Bertelsen & Krefft, 1988. – Taxonomy: First record from New Caledonia (East Coral Sea) by Anderson & Leslie (2001: 8). – Distribution: NC: 1, [5], [7]. Depth: 0–1900 m. Marine species.

Ceratiidae

Cryptopsaras couesii Gill, 1883. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 33) and Rivaton & Bourret (1999: 292). – Distribution: NC: 4, [5], [7], [13]; AU: [17], [18]; NZ: [19], 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–3085 m. Marine species.

Gigantactinidae

Gigantactis vanhoeffeni Brauer, 1902. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 39) and Rivaton & Bourret (1999: 292). – Distribution: NC: 4, [5], [7]. Depth: 300–3100 m. Marine species.

Linophrynidae

Haplophryne mollis (Brauer, 1902). – Taxonomy: First record from New Caledonia by Rivaton & Bourret (1999: 292); previously described as *Eridolychnus macracanthus* by Regan & Trewavas (1932: 104), and reported as *Edriolychnus schmidti* by Rivaton et al. (1990: 49). IRDNC and ZMUC material. – Distribution: NC: 4, [5], [7]. Depth: 0–2250 m. Marine species.

Linophryne sp. – Taxonomy: Recorded from New Caledonia by Stewart & Pietsch (1998: 29, 37). NMNZ material. – Distribution: NC: 4, [5], [7]. Depth: 210–944 m. Marine species.

Mugilidae

Cestraeus goldiei (Macleay, 1883). – Taxonomy: First record from New Caledonia by Harrison & Senou (1999: 2080). –

Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–2 m. Freshwater, transitional water and marine.

Cestraeus oxyrhyncus Valenciennes in Cuvier & Valenciennes, 1836 – Mulet noir; Ju-ikua (Cèmuhi), Diook (Fwai, Nemi), Hyu (Jawe), Yhu (Nyelayu), Dena (Paici), Duu-nuk (Pije). – Taxonomy: First record from New Caledonia as *Cestraeus oxyrhynchus* by Marquet et al. (1997: 30). – Distribution: NC: 5, 6, 7, 8, 9, 10. Depth: 0–2 m. Freshwater, transitional water and marine.

Cestraeus plicatilis Valenciennes in Cuvier & Valenciennes, 1836 – Mulet noir, cestre à lèvres plissées; Ju-ikua (Cèmuhi), Diook (Fwai, Nemi), Hyu (Jawe), Yhu (Nyelayu), Dena (Paici), Duu-nuk (Pije). – Taxonomy: First record from New Caledonia as *Agonostoma plicatile* by Günther (1881: 219–220). AMS and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10. Depth: 0–2 m. Freshwater, transitional water and marine.

Chelon macrolepis (Smith, 1846) – Mulet grosse écaille. – Taxonomy: First record from New Caledonia as *Mugil macrolepis* by Fourmanoir & Laboute (1976: 304). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–3 m. Freshwater, transitional water and marine.

Chelon melinopterus (Valenciennes in Cuvier & Valenciennes, 1836) – Mulet otomebora. – Taxonomy: First record from New Caledonia as *Liza melinoptera* by Rivaton et al. (1990: 53) and Kulbicki et al. (1993: 29). IRDNC material. – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–3 m. Transitional water and marine.

Chelon planiceps (Valenciennes in Cuvier & Valenciennes, 1836) – Mulet tade. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 321); previously reported as *Liza tade* (non Forsskål in Niebuhr, 1775) by Marquet et al. (1997: 30). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–3 m. Freshwater, transitional water and marine.

Chelon subviridis (Valenciennes in Cuvier & Valenciennes, 1836) – Mulet dos vert. – Taxonomy: First record from New Caledonia as *Liza subviridis* by Harrison & Senou (1999: 2093). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–3 m. Freshwater, transitional water and marine.

Crenimugil crenilabis (Forsskål in Niebuhr, 1775) – Mulet boxeur; Thaut (Pije). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 53) and Kulbicki et al. (1994: 28); previously described as *Mugil neocaledonicus* by Castelnau (1873: 116). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12]; AU: 17. Depth: 0–3 m. Transitional water and marine.

Crenimugil heterocheilos (Bleeker, 1855) – Mulet. – Taxonomy: First record from New Caledonia by Marquet et al. (1997: 30). – Distribution: NC: 6, 7. Depth: 0–3 m. Freshwater, transitional water and marine.

Ellochelon vaigiensis (Quoy & Gaimard, 1825) – Mulet à queue carrée. – Taxonomy: First record from New Caledonia as *Mugil vaigiensis* by Fourmanoir & Laboute (1976: 306); previously reported as *Mugil macrolepidotus* by Jouan (1861: 306). IRDNC material. – Distribution: NC: 6, 7, 8, [9], [10], 14. Depth: 0–3 m. Freshwater, transitional water and marine.

Moolgarda buchanani (Bleeker, 1854) – Grand mulet à queue bleu. – Taxonomy: First record from New Caledonia as *Mugil buchanani* by Fourmanoir & Laboute (1976: 304). IRDNC material. – Distribution: NC: 6, 7, 8, [9], [10]. Depth: 0–3 m. Freshwater, transitional water and marine.

Moolgarda cunnesius (Valenciennes in Cuvier & Valenciennes, 1836). – Taxonomy: First record from New Caledonia as *Mugil cunesius* by Borodin (1932: 76). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–3 m. Freshwater, transitional water and marine.

Moolgarda engeli (Bleeker, 1858–1859) – Mugil oeil de perdrix. – Taxonomy: First record from New Caledonia as *Valamugil engeli* by Rivaton et al. (1990: 53). IRDNC material. – Distribution: NC: 6, [7], 8, [9], [10], 14. Depth: 0–3 m. Transitional water and marine.

Moolgarda seheli (Forsskål in Niebuhr, 1775) – Mulet à queue bleue. – Taxonomy: First record from New Caledonia as *Valamugil seheli* by Fourmanoir & Laboute (1976: 306). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12], 14; AU: 18. Depth: 0–3 m. Freshwater, transitional water and marine.

Mugil cephalus Linnaeus, 1758 – Mulet bleu, mulet cabot; Ii-jen (Cèmuhi). – Taxonomy: First record from New Caledonia by Thomson (1954: 91–93); previously described as *Mugil catalarum* by Whitley (1951: 394–396). AMS and IRDNC material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 12, 14; AU: [17], 18; NZ: 23. Depth: 0–3 m. Freshwater, transitional water and marine.

Neomyxus leuciscus (Günther, 1871). – Taxonomy: **New record** from New Caledonia, based on IRDNC material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 0–4 m. Transitional water and marine.

Oedalechilus labiosus (Valenciennes in Cuvier & Valenciennes, 1836). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 321). SMNS material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–3 m. Marine species.

Atherionidae

Atherion elymus Jordan & Starks, 1901. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 12). IRDNC, SMNS and USNM material. – Distribution: NC: [5], [6], [7], [8], 9, 10, [11], 12, 14. Depth: 0–3 m. Marine species.

Atherinidae

Atherinomorus duodecimalis (Valenciennes in Cuvier & Valenciennes, 1835) – Prêtre rayé. – Taxonomy: First record from New Caledonia by Ivantsoff & Crowley (1999: 2122); previously reported as *Atherinomorus endrachtensis* (non Quoy & Gaimard, 1825) by Rivaton et al. (1990: 25) and Thollot (1996a: 8). FRLM and IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–4 m. Transitional water and marine.

Atherinomorus lacunosus (Bloch & Schneider [ex Forster], 1801) – Prêtre à large bande. – Taxonomy: Originally described from New Caledonia as *Atherina lacunosa* by Bloch & Schneider [ex Forster] (1801: XXXI, 112); subsequently reported as *Atherina* sp. by Jouan (1861: 305–306), as *Hepsetia pinguis* by Fowler (1928: 120), and as *Pranesus ogilbyi* (non Whitley, 1930) by Whitley (1961: 65). AMS, IRDNC and SMNS material. – Distribution: NC: 1, [5], 6, [7], 8, 9, 10. Depth: 0–39 m. Transitional water and marine.

**Bleheratherina pierucciae* Aarn & Ivantsoff, 2009. – Taxonomy: Originally described from New Caledonia (Tontouta River, southwestern Grande Terre) by Aarn & Ivantsoff (2009: 16). AMS and MNHN material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–1 m. Freshwater, transitional water and marine.

Hypoatherina barnesi Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953 – Atherine de Barnes. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 136). IRDNC and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–5 m. Marine species.

Hypoatherina ovalaua (Herre, 1935). – Taxonomy: First record from New Caledonia (Grande Terre) by Conand (1985: 464). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–5 m. Marine species.

Hypoatherina temminckii (Bleeker, 1853) – Athérine samoan. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 26), Rivaton & Bourret (1999: 38) and Fricke & Kulbicki (2006: 321). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–8 m. Marine species.

Stenatherina panatela (Jordan & Richardson, 1908). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 26) and Thollot (1996a: 8). IRDNC and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–3 m. Marine species.

Exocoetidae

Cheilopogon atrisignis (Jenkins, 1903) – Exocet planeur. – Taxonomy: First record from New Caledonia by Parin (1999: 2169). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–10 m. Marine species.

Cheilopogon dorsomacula (Fowler, 1944) – Exocet à dos tacheté. – Taxonomy: First record from New Caledonia by Parin (1999: 2170). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–10 m. Marine species.

Cheilopogon furcatus (Mitchill, 1815) – Exocet tacheté. – Taxonomy: First record from New Caledonia by Parin (1999: 2170). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14; AU: 17. Depth: 0–10 m. Marine species.

Cheilopogon rapanouiensis Parin, 1961. – Taxonomy: First record from New Caledonia by Parin (1999: 2172). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–10 m. Marine species.

Cheilopogon spilonotopterus (Bleeker, 1865) – Exocet marbré. – Taxonomy: First record from New Caledonia by Parin (1999: 2172). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Cheilopogon spilopterus (Valenciennes in Cuvier & Valenciennes, 1847). – Taxonomy: First record from New Caledonia by Parin (1999: 2172). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Cheilopogon suttoni (Whitley & Colefax, 1938) – Exocet de Sutton. – Taxonomy: First record from New Caledonia by Evans (2006: 91). – Distribution: NC: [5], [6], 7, [8], [9], [10]. Depth: 0–10 m. Marine species.

Cheilopogon unicolor (Valenciennes in Cuvier & Valenciennes, 1847). – Taxonomy: First record from New Caledonia by Parin (1999: 2173); previously described from west of Walpole Island as *Cypsilurus ogilbyi* by Jordan & Snyder in Jordan & Dickerson (1908: 604). SU material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14, 15. Depth: 0–10 m. Marine species.

Cypselurus angusticeps Nichols & Breder, 1935 – Exocet bécune. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 38) and Parin (1999: 2173). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–10 m. Marine species.

Cypselurus hexazona (Bleeker, 1853). – Taxonomy: **New record** from New Caledonia; previously reported as *Cypsilurus bruuni* (non Kotthaus, 1969) by Fourmanoir (1971b: 111). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Cypselurus naresii (Günther, 1889) – Exocet pharaon. – Taxonomy: First record from New Caledonia by Parin (1999: 2174). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–10 m. Marine species.

Cypselurus oligolepis (Bleeker, 1865) – Exocet à grandes écailles. – Taxonomy: First record from New Caledonia by Parin (1999: 2174). AMS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Cypselurus poecilopterus (Valenciennes in Cuvier & Valenciennes, 1847) – Exocet aile jaune. – Taxonomy: First record from New Caledonia by Parin (1999: 2175). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–10 m. Marine species.

Exocoetus obtusirostris Günther, 1866 – Exocet bouledogue. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 38) and Parin (1999: 2175). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14; AU: 17. Depth: 0–10 m. Marine species.

Exocoetus volitans Linnaeus, 1758 – Exocet volant. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 38) and Parin (1999: 2176). – Distribution: NC: [5], [6], [7], 8, [9], [10]; AU: 17; NZ: 22. Depth: 0–10 m. Marine species.

Hirundichthys speculiger (Valenciennes in Cuvier & Valenciennes, 1847) – Exocet miroir. – Taxonomy: First record from New Caledonia by Parin (1999: 2177). – Distribution: NC: [5], [6], [7], 8, [9], [10]; AU: 17; NZ: 22, 23. Depth: 0–10 m. Marine species.

Parexocoetus brachypterus (Solander in Richardson, 1846) – Exocet voilier. – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Hemiramphidae

Euleptorhamphus viridis (Hasselt [ex Russell], 1823). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 43) and Collette (1999b: 2193). – Distribution: NC: [5], [6], [7], 8, [9], [10]; AU: 17, 18; NZ: 20, 23. Depth: 0–1 m. Marine species.

Hemiramphus bruuni Parin, Collette & Shcherbachev, 1980. – Taxonomy: **New record** from New Caledonia; previously reported as *Oxyporhamphus meristocystis* (non Parin, 1961) by Rivaton et al. (1990: 38) and Rivaton & Bourret (1999: 294). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–6 m. Transitional water and marine.

Hemiramphus far (Forsskål in Niebuhr, 1775) – Demi-bec à tâches noires, aiguillette. – Taxonomy: First record from New Caledonia by Fowler (1928: 77–78); previously reported as *Hemiramphus* sp. by Jouan (1861: 304–305), as *Hemiramphus marginatus* (non Forsskål in Niebuhr, 1775) by Jouan (1879: 334), and as *Hemirhamphus commersonii* by Castelnau (1873: 120). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 0–6 m. Transitional water and marine.

Hyporhamphus affinis (Günther, 1866). – Taxonomy: **New record** from New Caledonia, based on seven specimens collected in 1999 at Nouméa, Grande Terre by M. Kulbicki ('NC-Rotenone' database), identified as *Hemirhamphus affinis*. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–6 m. Marine species.

Hyporhamphus dussumieri (Valenciennes in Cuvier & Valenciennes, 1847) – Demi-bec. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 306). IRDNC and SMNS material. – Distribution: NC: [5], [6], 7, 8, [9], 10. Depth: 0–6 m. Marine species.

Zenarchopterus dispar (Valenciennes in Cuvier & Valenciennes, 1847). – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS and IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–3 m. Freshwater, transitional water and marine.

Belonidae

Ablennes hians (Valenciennes in Cuvier & Valenciennes, 1846) – Orphie plate. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 27) and Collette (1999a: 2154). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14; AU: 18; NZ: 20. Depth: 0–3 m. Freshwater, transitional water and marine.

Platybelone platyura (Bennett, 1832) – Orphie carène. – Taxonomy: First record from New Caledonia as *Platybelone argalus platyura* by Parin (1967: 13–18). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14; AU: 17, 18; NZ: 20. Depth: 0–2 m. Freshwater, transitional water and marine.

Strongylura incisa (Valenciennes in Cuvier & Valenciennes, 1846). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 27) and Kulbicki et al. (1993: 27). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–3 m. Marine species.

Strongylura leiura (Bleeker, 1850) – Orphie littorale, aiguillette ruban. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 306). SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–3 m. Transitional water and marine.

Strongylura urvillii (Valenciennes in Cuvier & Valenciennes, 1846) – Orphie des palétuviers. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 306). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–3 m. Transitional water and marine.

Tylosurus crocodilus (Péron & LeSueur in LeSueur, 1821) – Orphie crocodile. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 306). – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 0–13 m. Transitional water and marine.

Tylosurus imperialis (Rafinesque-Schmaltz, 1810) – Aiguille voyeuse. – Taxonomy: **New record** from New Caledonia; previously reported as *Belone* sp. by Jouan (1861: 303–304), as *Belone melanotus* by Jouan (1879: 334), and as *Tylosurus acusmelanotus* by Rivaton et al. (1990: 27). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–3 m. Marine species.

Poeciliidae

Poecilia reticulata Peters, 1859 – Guppy, poisson million. – Taxonomy: Reported from New Caledonia as *Lebistes reticulatus* by Fowler (1953: 385). – Distribution: NC: 6, 7, 8, 9, 10. Introduced, not native. Freshwater and transitional water.

Xiphophorus hellerii Heckel, 1848 – Porte-épée, xipho. – Taxonomy: Reported from New Caledonia by Marquet et al. (1997: 29). – Distribution: NC: 6, 7, 8, 9, 10. Introduced, not native. Freshwater and transitional water.

Melamphaidae

Melamphaes danae Ebeling, 1962. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51) and Rivaton & Bourret (1999: 296). – Distribution: NC: 4, [5], [7], 15. Depth: 125–1300 m. Marine species.

Melamphaes eulepis Ebeling, 1962. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51) and Rivaton & Bourret (1999: 296). – Distribution: NC: 4, [5], [7], 8. Depth: 150–360 m. Marine species.

Melamphaes indicus Ebeling, 1962. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51) and Rivaton & Bourret (1999: 296). – Distribution: NC: 4, [5], [7]. Depth: 200–500 m. Marine species.

Melamphaes janae Ebeling, 1962. – Taxonomy: First record from New Caledonia by Rivaton & Bourret (1999: 296). – Distribution: NC: [5], [7], 15. Depth: 200–500 m. Marine species.

Melamphaes polylepis Ebeling, 1962. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51) and Rivaton & Bourret (1999: 296). – Distribution: NC: 4, [5], [7]. Depth: 200–2500 m. Marine species.

Poromitra capito Goode & Bean, 1883. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51) and Rivaton & Bourret (1999: 298). IRDNC material. – Distribution: NC: 4, [5], [7], 15. Depth: 400–1000 m. Marine species.

Poromitra megalops (Lütken, 1878). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51) and Rivaton & Bourret (1999: 298). – Distribution: NC: 4, [5], [7]. Depth: 150–1000 m. Marine species.

Scopeloberyx opisthopterus (Parr, 1933). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51) and Rivaton & Bourret (1999: 300). – Distribution: NC: [5], [7], 15, 16. Depth: 500–3000 m. Marine species.

Scopeloberyx robustus (Günther, 1887). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51) and Rivaton & Bourret (1999: 300). – Distribution: NC: 4, [5], [7]. Depth: 0–4740 m. Marine species.

Scopelogadus mizolepis (Günther, 1878). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51, as *Scopeloberyx mizolepis*) and Rivaton & Bourret (1999: 300). – Distribution: NC: 4, [5], [7], 14. Depth: 300–3385 m. Marine species.

Rondeletiidae

Rondeletia loricata Abe & Hotta, 1963. – Taxonomy: First record from New Caledonia as *Rondeletia loricala* by Fourmanoir (1970a: 22). – Distribution: NC: 4, [5], [7], 14. Depth: 100–3500 m. Marine species.

Barbourisiidae

Barbourisia rufa Parr, 1945. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 27) and Rivaton & Bourret (1999: 304). – Distribution: NC: [5], [7], 14. Depth: 120–2000 m. Marine species.

Cetomimidae

Cetostoma regani Zugmayer, 1914. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 33, as *Cetostomus regani*) and Rivaton & Bourret (1999: 304). – Distribution: NC: 4, [5], [7]. Depth: 0–2250 m. Marine species.

Danacetichthys galathenus Paxton, 1989. – Taxonomy: Originally described from New Caledonia by Paxton (1989: 169). ZMUC material (holotype). – Distribution: NC: 4, [5], [7]. Depth: 0–1330 m. Marine species.

Gyrinomimus bruuni Rofen, 1959. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 33) and Rivaton & Bourret (1999: 304). – Distribution: NC: 4, [5], [7], 8. Depth: 0–4820 m. Marine species.

Anoplogastridae

Anoplogaster cornuta (Valenciennes in Cuvier & Valenciennes, 1833) – Ogre. – Taxonomy: First record from New Caledonia as *Anoplogaster cornutus* by Fourmanoir (1969: 52). IRDNC material. – Distribution: NC: 1, 4, [5], [7], 14; NZ: 22. Depth: 500–2000 m. Marine species.

Diretmidae

Diretmus argenteus Johnson, 1864 – Rayon épineux. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 116). – Distribution: NC: 4, [5], [7]; AU: 17, 18; NZ: 23, 24, 25, 26, 27, 28, 29, 30. Depth: 500–2000 m. Marine species.

Anomalopidae

Anomalops katoptron (Bleeker, 1856). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 22) and Laboute & Grandperrin (2000: 148, 150). IRDNC material. – Distribution: NC: [1], [5], [6], [7], 8, [9], [10]. Depth: 1–400 m. Marine species.

Photoblepharon palpebratum (Boddaert, 1781). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 22) and Kotlyar (1996: 215–216). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–25 m. Marine species.

Monocentridae

Monocentris japonica (Houttuyn, 1782) – Poisson ananas. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 148). – Distribution: NC: 1, [5], [7]; NZ: 20, 23. Depth: 10–300 m. Marine species.

Trachichthyidae

Gephyroberyx darwinii (Johnson, 1866). – Taxonomy: First record from New Caledonia by Kotlyar (1996: 124–130); previously reported as *Gephyroberyx* sp. by Fourmanoir (1971b: 116). IRDNC material. – Distribution: NC: 1, [5], [7]; NZ: 22. Depth: 200–1000 m. Marine species.

Hoplostethus atlanticus Collett, 1889. – Taxonomy: **New record** from New Caledonia; previously reported as *Hoplostethus* sp. by Fourmanoir (1976: 49). IRDNC material. – Distribution: NC: [5], [7], 14; NZ: 19, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 180–1000 m. Marine species.

Optivus agastos Gomon, 2004. – Taxonomy: **New record** from New Caledonia; previously reported as *Optivus elongatus* (non Günther, 1859) by Rivaton et al. (1990: 75). IRDNC material. – Distribution: NC: 2, [5], [7]; AU: 17; NZ: 21, 23. Depth: 1–146 m. Marine species.

Paratrachichthys trailli (Hutton, 1875). – Taxonomy: First record from New Caledonia as *Paratrachichthys traili* by Kotlyar (1996: 185–187). – Distribution: NC: 1, [5], [7]; AU: [17], [18]; NZ: [20], 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 70–327 m. Marine species.

**Parinoberyx horridus* Kotlyar, 1984. – Taxonomy: Originally described from New Caledonia (Chesterfield Bank) by Kotlyar (1984: 1592). ZMMU material (holotype). – Distribution: NC: 1, [5], [7]. Depth: 300 m. Marine species.

Berycidae

Beryx decadactylus Cuvier in Cuvier & Valenciennes, 1829 – Beryx commun. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 27) and Kulbicki et al. (1994: 14). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17; NZ: 23, 24, 25, 26, 27, 28, 29, 30. Depth: 110–1000 m. Marine species.

Beryx mollis Abe, 1959. – Taxonomy: First record from New Caledonia by Akimoto et al. (2006). – Distribution: NC: [5], [7]. Depth: 100–500 m. Marine species.

Beryx splendens Lowe, 1834 – Beryx, Alfonsin. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 27) and Kulbicki et al. (1994: 14). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12]; NZ: 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 25–1300 m. Marine species.

Centroberyx affinis (Günther, 1859). – Taxonomy: First record from New Caledonia by Rivaton (1989: 148). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12], 13; AU: 18; NZ: 20, 21, 22, 23, 24, 25, 26, 28, 30. Depth: 10–450 m. Marine species.

Centroberyx druzhinini (Busakhin, 1981). – Taxonomy: First record from New Caledonia by Paxton (1999: 2224). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 128–130 m. Marine species.

Holocentridae

Myripristis adusta Bleeker, 1853 – Myripristis ardoisé. – Taxonomy: First record from New Caledonia as *Myripristis adustus* by Fourmanoir & Laboute (1976: 156). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 1–25 m. Marine species.

Myripristis berndti Jordan & Evermann, 1903 – Myripristis à nageoires oranges, myripristis agréable. – Taxonomy: First

record from New Caledonia by RIVATON et al. (1990: 43) and KULBICKI et al. (1993: 27); previously reported as *Myripristis amaenus* (non Castelnau, 1873) by FOURMANOIR & LABOUTE (1976: 155). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], [11], [12], 14, [15]; AU: 18; NZ: 19, 20. Depth: 1–50 m. Marine species.

Myripristis botche Cuvier, 1829 – Myripristis à nageoires tâchetées. – Taxonomy: First record from New Caledonia by LETOURNEUR et al. (1998: 41); previously reported as *Myripristis murdjan* (non Forsskål in Niebuhr, 1775) by FOURMANOIR & LABOUTE (1976: 156–157), and as *Myripristis melanostictus* by RANDALL & GUÉZÉ (1981: 3–4). – Distribution: NC: 5, 6, [7], 8, [9], [10], 14. Depth: 20–71 m. Marine species.

Myripristis hexagona (Lacepède, 1802). – Taxonomy: First record from New Caledonia by RANDALL & GREENFIELD (1999: 2254). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 1–40 m. Marine species.

Myripristis kuntee Valenciennes in Cuvier & Valenciennes, 1831 – Myripristis Kunté. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 156). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], [11], [12], 14; AU: 18. Depth: 2–40 m. Marine species.

Myripristis murdjan (Forsskål in Niebuhr, 1775) – Marignan pomme de pin. – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 14); previously listed as *Myripristis bowditchae* by RIVATON et al. (1990: 43). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 18. Depth: 0–50 m. Marine species.

Myripristis pralinia Cuvier in Cuvier & Valenciennes, 1829 – Myripristis de port Praslin. – Taxonomy: First record from New Caledonia as *Myripristis pralinius* by FOURMANOIR & LABOUTE (1976: 156). IRDNC and USNM material. – Distribution: NC: 1, [5], [6], 7, 8, [9], [10], 14. Depth: 2–50 m. Marine species.

Myripristis violacea Bleeker, 1851 – Myripristis violacé. – Taxonomy: First record from New Caledonia as *Myripristis violaceus* by FOURMANOIR & LABOUTE (1976: 156). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 14. Depth: 2–30 m. Marine species.

Myripristis vittata Valenciennes in Cuvier & Valenciennes, 1831. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 44) and KULBICKI et al. (1994: 14); previously reported as *Myripristis trachyacron* (non Bleeker, 1863) by BORODIN (1932: 75). – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], 14. Depth: 3–80 m. Marine species.

Myripristis woodsi Greenfield, 1974. – Taxonomy: First record from New Caledonia by FRICKE & KULBICKI (2006: 323); previously reported as *Myripristis* sp. by LABOUTE & GRANDPERRIN (2000: 143). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 2–20 m. Marine species.

Neoniphon argenteus (Valenciennes in Cuvier & Valenciennes, 1831). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 44) and KULBICKI et al. (1993: 27); previously reported as *Holocentrum* sp. by JOUAN (1861: 287–288). IRDNC and SMNS material. – Distribution: NC: 1, [5], 6, [7], 8, 9, [10], 14. Depth: 0–20 m. Marine species.

Neoniphon opercularis (Valenciennes in Cuvier & Valenciennes, 1831) – Flamme dorée. – Taxonomy: First record from New Caledonia as *Flammeo opercularis* by FOURMANOIR & LABOUTE (1976: 154). – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], 12, 14. Depth: 1–25 m. Marine species.

Neoniphon sammara (Forsskål in Niebuhr, 1775) – Flamme argentée. – Taxonomy: First record from New Caledonia as *Holocentrus sammara* by PLESSIS & FOURMANOIR (1966c: 126). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14, [15]; AU: 18. Depth: 0–46 m. Marine species.

Ostichthys hypsipterygion Randall, Shimizu & Yamakawa, 1982. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by KULBICKI et al. (1994: 14). – Distribution: NC: 1, [5], [7]. Depth: 270–355 m. Marine species.

Ostichthys japonicus (Cuvier in Cuvier & Valenciennes, 1829). – Taxonomy: First record from New Caledonia as *Ostichthys japonica* by FOURMANOIR & RIVATON (1979: 431). IRDNC material. – Distribution: NC: [5], [7], 14. Depth: 180 m. Marine species.

Ostichthys kaianus (Günther, 1880). – Taxonomy: First record from New Caledonia by RIVATON (1989: 148). – Distribution: NC: 1, [5], [7], 14. Depth: 225–640 m. Marine species.

Plectrypops lima (Valenciennes in Cuvier & Valenciennes, 1831) – Rouget raboteux. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 155). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12], 14; AU: 18. Depth: 5–40 m. Marine species.

Sargocentron caudimaculatum (Rüppell, 1838) – Marignan rouge et argent. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 44) and KULBICKI et al. (1994: 15). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 14. Depth: 2–40 m. Marine species.

Sargocentron cornutum (Bleeker, 1853) – Soldat à tâches noire. – Taxonomy: First record from New Caledonia as *Adioryx cornutus* by FOURMANOIR & LABOUTE (1976: 152). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 2–30 m. Marine species.

Sargocentron diadema (Lacepède [ex Commerson], 1802) – Soldat couronné. – Taxonomy: First record from New Caledonia as *Holocentrum diadema* by BORODIN (1932: 75). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 18. Depth: 0–60 m. Marine species.

Sargocentron ensifer (Jordan & Evermann, 1903). – Taxonomy: First record from New Caledonia as *Sargocentron ensiferum* by RIVATON et al. (1990: 44) and MYERS (1999: 84); previously reported as *Adioryx furcatus* (non Günther, 1859) by FOURMANOIR & LABOUTE (1976: 153). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–40 m. Marine species.

Sargocentron iota Randall, 1998. – Taxonomy: First record from New Caledonia by RANDALL (2005a: 95); previously reported as *Sargocentron* sp. by RIVATON et al. (1990: 44). SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, 9, [10]. Depth: 1–34 m. Marine species.

Sargocentron lepros (Allen & Cross, 1983). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by KULBICKI et al. (1994: 15). – Distribution: NC: 1, [5], [7]. Depth: 10–45 m. Marine species.

Sargocentron melanospilos (Bleeker, 1858). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 44) and Kulbicki et al. (1994: 15). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 14. Depth: 5–90 m. Marine species.

Sargocentron microstoma (Günther, 1859). – Taxonomy: First record from New Caledonia (Grande Terre) by Kulbicki et al. (1993: 27). – Distribution: NC: 5, 6, [7], 8, [9], [10]. Depth: 1–35 m. Marine species.

Sargocentron praslin (Lacepède, 1802). – Taxonomy: First record from New Caledonia (Grande Terre) by Fricke & Kulbicki (2006: 323). SMNS material. – Distribution: NC: 5, [6], [7], [8], [9], 10. Depth: 0–5 m. Marine species.

Sargocentron punctatissimum (Cuvier in Cuvier & Valenciennes, 1829). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 44) and Kulbicki et al. (1994: 15). SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–183 m. Marine species.

Sargocentron rubrum (Forsskål in Niebuhr, 1775) – Soldat rouge. – Taxonomy: First record from New Caledonia as *Holocentrum rubrum* by Borodin (1932: 75). IRDNC, SMNS and USNM material. – Distribution: NC: [1], 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17. Depth: 1–84 m. Marine species.

Sargocentron spiniferum (Forsskål in Niebuhr, 1775) – Commissaire. – Taxonomy: First record from New Caledonia as *Adioryx spinifer* by Fourmanoir & Laboute (1976: 154). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–122 m. Marine species.

Sargocentron tiere (Cuvier in Cuvier & Valenciennes, 1829). – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 12). USNM material. – Distribution: NC: [1], [5], [6], [7], 8, [9], [10], 14. Depth: 1–183 m. Marine species.

Sargocentron violaceum (Bleeker, 1853). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 44) and Kulbicki & Williams (1997: 12). – Distribution: NC: [1], [5], [6], [7], 8, [9], [10], 14. Depth: 1–30 m. Marine species.

Parazenidae

Cyttopsis rosea (Lowe, 1843). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 77). IRDNC material. – Distribution: NC: 4, [5], [7]. Depth: 150–730 m. Marine species.

Parazen pacificus Kamohara, 1935. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 59) and Kulbicki et al. (1994: 15). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 145–500 m. Marine species.

Zeniontidae

Cyttomimus affinis Weber, 1913. – Taxonomy: First record from New Caledonia by Fourmanoir & Rivaton (1979: 409–410). IRDNC material. – Distribution: NC: [5], [7], 12. Depth: 304–415 m. Marine species.

Cyttomimus stelgis Gilbert, 1905. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 77) and Kulbicki et al. (1994: 15). IRDNC material. – Distribution: NC: 1, [5], [7], 12. Depth: 270–644 m. Marine species.

Zenion longipinnis Kotthaus, 1970. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 116). IRDNC material. – Distribution: NC: [5], [7], 8, 12. Depth: 200–450 m. Marine species.

Grammicolepididae

Grammicolepis brachiusculus Poey, 1873. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 43). IRDNC material. – Distribution: NC: 4, [5], [7]. Depth: 400–1026 m. Marine species.

Macrurocyttus acanthopodus Fowler, 1934. – Taxonomy: First record from New Caledonia by Nyako & Amaoka (1996). – Distribution: NC: 1, 4, [5], [7]. Depth: 878–1140 m. Marine species.

Xenolepidichthys dalgleishi Gilchrist, 1922. – Taxonomy: First record from New Caledonia by Fourmanoir (1976: 51). IRDNC material. – Distribution: NC: 4, [5], [7], 12. Depth: 128–885 m. Marine species.

Zeidae

Zenopsis nebulosa (Temminck & Schlegel, 1845). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 148). IRDNC material. – Distribution: NC: 1, [5], [7]; AU: 17; NZ: 23, 24, 25, 26, 28, 29, 30. Depth: 30–800 m. Marine species.

Pegasidae

Eurypegasus draconis (Linné, 1766) – Pégase dragon. – Taxonomy: First record from New Caledonia as *Pegasus draconis* by Whitley (1961: 65). AMS, IRDNC and SMNS material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 3–91 m. Transitional water and marine.

Solenostomidae

Solenostomus cyanopterus Bleeker, 1854 – Poisson-fantôme. – Taxonomy: First record from New Caledonia as *Solenichthys cyanopterus* by Whitley (1961: 65). AMS, IRDNC and SMNS material. – Distribution: NC: [1], [5], [6], [7], 8, [9], [10], 14. Depth: 0–25 m. Marine species.

Solenostomus paradoxus (Pallas, 1770) – Poisson-fantôme. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 72) and Myers (1999: 86). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 0–20 m. Marine species.

Syngnathidae

Acentronura breviperula Fraser-Brunner & Whitley, 1949. – Taxonomy: First record from New Caledonia by Fricke (2004b: 8–9); previously reported as *Acentronura* sp. by Dawson (1985: 15), as *Acentronura tentaculata* (non Günther, 1870), *A. australe* (non Waite & Hale, 1921) and *A. gracilissima* (non Temminck & Schlegel, 1850) by Rivaton et al. (1990: 73), as *Halicampus* sp. and *Hippocampus* sp. by Laboute & Grandperrin (2000: 157, 159). MNHN and SMNS material. – Distribution: NC: [5], 6, [7], 8, 9, 10. Depth: 1–47 m. Marine species.

Corythoichthys sp. – Taxonomy: Reported from New Caledonia by Fricke (2004b: 9–12); previously recorded as *Corythoichthys amplexus* (non Dawson & Randall, 1975) by Dawson (1985: 38–39). Undescribed species similar to

Corythoichthys amplexus (see KUITER 2000: 106). SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 11, [12]. Depth: 0–20 m. Marine species.

Corythoichthys conspicillatus (Jenyns, 1842). – Taxonomy: First record from New Caledonia by FOWLER (1928: 114); subsequently reported as *Corythoichthys flavofasciatus* (non Rüppell, 1838) by FOURMANOIR (1971b: 112). IRDNC, MNHN and SMNS material. – Distribution: NC: [5], [6], [7], 8, 9, [10], 11, [12], 14. Depth: 0–10 m. Marine species.

Corythoichthys haematopterus (Bleeker, 1851). – Taxonomy: First record from New Caledonia by FOURMANOIR (1971b: 112). IRDNC, MNHN and SMNS material. – Distribution: NC: 1, 5, 6, [7], 8, 9, [10]. Depth: 0–21 m. Marine species.

Corythoichthys intestinalis (Ramsay, 1881) – Hippocampe flûte. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 272); previously reported as *Corythoichthys flavofasciatus* (non Rüppell, 1838) by WHITLEY (1961: 64) and as *Hippichthys intestinalis waitei* by PLESSIS & FOURMANOIR (1966c: 125). AMS, IRDNC, MNHN, SMNS and USNM material. – Distribution: NC: 1, 5, [6], [7], 8, 9, [10], 14. Depth: 0–32 m. Marine species.

Corythoichthys nigripectus Herald in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 74) and KULBICKI & WILLIAMS (1997: 12). IRDNC, MNHN, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], 10, 14. Depth: 5–30 m. Marine species.

Corythoichthys ocellatus Herald in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia (Grande Terre) by LABOUTE & GRANDPERRIN (2000: 155). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–25 m. Marine species.

Corythoichthys paxtoni Dawson, 1977. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by KULBICKI et al. (1994: 16). – Distribution: NC: 1, [5], [7]. Depth: 0–15 m. Marine species.

Corythoichthys schultzi Herald in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia by DAWSON (1985: 46–47). MNHN, SMNS and USNM material. – Distribution: NC: 1, 5, [6], [7], 8, [9], 10, 14. Depth: 1–30 m. Marine species.

Cosmocampus banneri (Herald & Randall, 1972). – Taxonomy: First record from New Caledonia by DAWSON (1985: 51). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–30 m. Marine species.

Doryrhamphus melanopleura (Bleeker, 1858). – Taxonomy: First record from New Caledonia by FRICKE (2004b: 20); previously reported as *Doryrhamphus excisus excisus* (non Kaup, 1856) by RIVATON et al. (1990: 74) and KULBICKI et al. (1994: 16). IRDNC, MNHN, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], 12, 14. Depth: 0–10 m. Marine species.

**Dunckerocampus chapmani* (Herald in Schultz, Herald, Lachner, Welander & Woods, 1953). – Taxonomy: Originally described from New Caledonia as *Dunckerocampus caulleryi chapmani* by HERALD in SCHULTZ et al. (1953: 250–252); previously reported as *Syngnathus* sp. by JOUAN (1861: 250–251). AMS, CAS, GCRL, IRDNC, MNHN, SMNS, SU and USNM material. – Distribution: NC: [5], [7], 8, 9, 10, 11, 12. Depth: 0–8 m. Marine species.

Dunckerocampus dactyliophorus (Bleeker, 1853) – Flûte rayée. – Taxonomy: First record from New Caledonia as *Doryichthys dactyliophorus* by GÜNTHER (1910: 433–434). AMS, MNHN and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–57 m. Marine species.

**Festucalex kulbickii* Fricke, 2004. – Taxonomy: Originally described from New Caledonia by FRICKE (2004b: 25–27); previously reported as *Ichthyocampus erythraeus* (non Gilbert, 1905) by PLESSIS & FOURMANOIR (1966c: 125), as *Festucalex gibbsi* (non Dawson, 1977) by RIVATON et al. (1990: 74), and as *Festucalex* sp. 1 by KUITER (2000: 122). AMS, IRDNC and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, 9, 10, 11. Depth: 2–56 m. Marine species.

Festucalex wassi Dawson, 1977. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 74) and FRICKE (2004b: 2). IRDNC, MNHN and SMNS material. – Distribution: NC: [5], [6], [7], [8], 9, [10]. Depth: 2–50 m. Marine species.

Halicampus boothae (Whitley, 1964). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by KULBICKI et al. (1994: 16). – Distribution: NC: 1, [5], [7]; AU: 17, 18. Depth: 1–30 m. Marine species.

Halicampus brocki (Herald in Schultz, Herald, Lachner, Welander & Woods, 1953). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 74) and FRICKE (2004b: 28–29). – Distribution: NC: [5], [6], [7], 8, [9], [10]; AU: 17. Depth: 2–23 m. Marine species.

Halicampus dunckeri (Chabanaud, 1929). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 74), RIVATON & RICHER DE FORGES (1990: 35, 64), and KULBICKI et al. (1994: 16). MNHN and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 11. Depth: 1–25 m. Marine species.

Halicampus mataafae (Jordan & Seale, 1906). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by KULBICKI et al. (1994: 16). – Distribution: NC: 1, [5], [7]. Depth: 0–15 m. Marine species.

Halicampus nitidus (Günther, 1873). – Taxonomy: First record from New Caledonia by DAWSON (1985: 90–91). IRDNC, MNHN and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 2–20 m. Marine species.

Halicampus spinirostris (Dawson & Allen, 1981). – Taxonomy: First record from New Caledonia by FRICKE (2004b: 31). MNHN and SMNS material. – Distribution: NC: [5], [6], [7], [8], [9], [10], 11. Depth: 4–26 m. Marine species.

Hippichthys spicifer (Rüppell, 1838). – Taxonomy: First record from New Caledonia by DAWSON (1985: 98–99). IRDNC, MNHN and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–3 m. Freshwater, transitional water and marine.

Hippocampus bargibanti Whitley, 1970. – Taxonomy: Originally described from New Caledonia by WHITLEY (1970). AMS and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 10–60 m. Marine species.

**Hippocampus curvicuspis* Fricke, 2004 – Hippocampe épineux. – Taxonomy: Originally described from New Caledonia by FRICKE (2004b: 34–36); previously reported as *Hippocampus histrix* (non Kaup, 1853) by WHITLEY (1961: 64), *Hippocampus jayakari* (non Boulenger, 1900) by FOURMANOIR (1971b: 112), and *Hippocampus kuda* (non Bleeker, 1852) by MYERS (1999: 89). AMS, MNHN and SMNS material.

– Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 6–20 m. Marine species.

**Hippocampus pusillus* Fricke, 2004. – Taxonomy: Originally described from New Caledonia by Fricke (2004b: 37–39). MNHN and SMNS material. – Distribution: NC: 5, [7], 14. Depth: 35–228 m. Marine species.

Hippocampus semispinosus Kuiter, 2001 – Grand hippocampe, cheval marin. – Taxonomy: First record from New Caledonia by Fricke (2004b: 39–42); previously reported as *Hippocampus* sp. by Jouan (1861: 250), *Hippocampus kuda* (non Bleeker, 1852) by Whitley (1961: 64), and as *Hippocampus fisheri* (non Jordan & Evermann, 1903) by Lourie et al. (1999: 92–93). AMS material (holotype). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 20–60 m. Marine species.

Hippocampus taeniopterus Bleeker, 1852. – Taxonomy: First record from New Caledonia by Fricke (2004b: 42). MNHN material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–15 m. Marine species.

Micrognathus brevicorpus Fricke, 2004. – Taxonomy: Originally described from New Caledonia by Fricke (2004b: 43–46); previously reported as *Micrognathus andersonii* (part, non Bleeker, 1858) by Dawson (1985: 122–123). AMS, MNHN and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–3 m. Marine species.

Micrognathus micronotopterus (Fowler, 1938). – Taxonomy: First record from New Caledonia by Fricke (2004b: 46). MNHN and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 11. Depth: 0–6 m. Marine species.

Micrognathus natans Dawson, 1982. – Taxonomy: First record from New Caledonia by Dawson (1985: 125–126). AMS and SMNS material. – Distribution: NC: [1], [5], [6], [7], 8, [9], [10], 14. Depth: 0–25 m. Marine species.

Micrognathus pygmaeus Fritzsche, 1981. – Taxonomy: First record from New Caledonia as *Micrognathus brevirostris pygmaeus* by Dawson (1985: 123–124); previously reported as *Micrognathus brevirostris* (non Rüppell, 1838) by Herald in Schultz et al. (1953: 260). MNHN, SMNS and USNM material. – Distribution: NC: 1, [5], 6, [7], 8, [9], [10], [11], 12. Depth: 0–6 m. Marine species.

Microphis argulus (Peters, 1855). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 74) and Fricke (2004b: 47–48). SMNS material. – Distribution: NC: 1, [5], [7], 8. Depth: 0–32 m. Freshwater, transitional water and marine.

Microphis brachyurus (Bleeker, 1853) – Syngnathe à queue courte; Medowai (Paici). – Taxonomy: First record from New Caledonia (Grande Terre) by Duncker (1915: 45–46); previously described as *Microphis jouani* by Duméril (1870: 592). MNHN material. – Distribution: NC: [5], [7], 9. Depth: 0–5 m. Freshwater, transitional water and marine.

Microphis brevidorsalis (Beaufort, 1913). – Taxonomy: First record from New Caledonia by Fricke (2004b: 49–50). IRDNC, MNHN and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–2 m. Freshwater, transitional water and marine.

**Microphis cruentus* Dawson & Fourmanoir, 1981 – Syngnathe calédonien, syngnathe sanglant. – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) by Dawson & Fourmanoir (1981). AMS, GCRL, MNHN and USNM material. – Distribution: NC: [5], [7], 8. Depth: 0–5 m. Freshwater, transitional water and marine.

Microphis leiaspis (Bleeker, 1853) – Syngnathe. – Taxonomy: First record from New Caledonia as *Coelonotus leiaspis* by Fourmanoir (1971b: 112). MNHN material. – Distribution: NC: [5], [7], 8. Depth: 0–5 m. Freshwater, transitional water and marine.

Microphis retzii (Bleeker, 1856) – Syngnathe. – Taxonomy: First record from New Caledonia (Grande Terre) as *Doryichthys retzii* by Kähsbauer (1976: 284); previously reported as *Doryichthys caudatus* by Weber & Beaufort (1915: 25). – Distribution: NC: [5], 6, [7]. Depth: 0–5 m. Freshwater, transitional water and marine.

Phoxocampus belcheri (Kaup, 1856). – Taxonomy: First record from New Caledonia (Grande Terre) as *Ichthyocampus belcheri* by Plessis & Fourmanoir (1966c: 125). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–15 m. Marine species.

Phoxocampus diacanthus (Schultz, 1943). – Taxonomy: First record from New Caledonia by Dawson (1985: 156). MNHN, SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–40 m. Marine species.

Siokunichthys herrei Herald in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia by Fricke (2004b: 53). IRDNC, MNHN and SMNS material. – Distribution: NC: [5], [6], [7], [8], [9], [10]. Depth: 0–37 m. Marine species.

Siokunichthys striatus Fricke, 2004. – Taxonomy: Originally described from New Caledonia by Fricke (2004b: 54–56). MNHN material (holotype). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 2 m. Marine species.

Syngnathoides biaculeatus (Bloch, 1785) – Longue flûte. – Taxonomy: First record from New Caledonia as *Syngnathus biaculeatus* by Jouan (1863: 177–178); subsequently reported as *Syngnathoides* sp. by Laboute & Grandperrin (2000: 157). MNHN and SMNS material. – Distribution: NC: [5], 6, [7], 8, [9], [10]. Depth: 1–10 m. Marine species.

Trachyrhamphus bicoarctatus (Bleeker, 1857). – Taxonomy: First record from New Caledonia by Dawson (1982: 181–188); previously reported as *Syngnathus* sp. by Jouan (1863: 178), as *Ichthyocampus maculatus* by Jouan (1879: 332), as *Yozia intermedia* (non Kaup, 1856) by Fourmanoir (1971b: 112), and as *Trachyrhamphus longirostris* (non Kaup, 1856) by Rivaton et al. (1990: 74). MNHN and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 1–42 m. Marine species.

Aulostomidae

Aulostomus chinensis (Linné, 1766) – Poisson trompette. – Taxonomy: First record from New Caledonia by Whitley (1961: 64). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17, 18; NZ: 20. Depth: 2–122 m. Marine species.

Fistulariidae

Fistularia commersonii Rüppell, 1838 – Cornette à taches bleues. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 38) and Wantiez (1992: 946); previously reported as *Fistularia* sp. by Jouan (1861: 301–302) and *Fistularia petimba* (non Lacepède, 1803) by Fowler (1928: 117–118). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14, [15]; AU: 17, 18; NZ: 20, 23. Depth: 0–128 m. Marine species.

Fistularia petimba Lacepède, 1803 – Poisson flûte, aiguillette du fond. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 111); also reported as *Fistularia villosa* by Fourmanoir (1971b: 111). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 14. Depth: 10–200 m. Marine species.

Macroramphosidae

Macroramphosus scolopax (Linnaeus, 1758). – Taxonomy: First record from New Caledonia (Norfolk Ridge) by Duhamel (1997: 85). IRDNC material. – Distribution: NC: [5], [7], 13; AU: [18]; NZ: 23. Depth: 25–350 m. Marine species.

Notopogon xenosoma Regan, 1914. – Taxonomy: First record from New Caledonia by Duhamel (1995: 277–281). MNHN and NMNZ material. – Distribution: NC: [5], [7], 12, 13; AU: [18]; NZ: 22, 23, 24, 25, 26, 28, 29, 30. Depth: 255–610 m. Marine species.

Centriscidae

Aeoliscus strigatus (Günther, 1861) – Poisson couteau; Kadioumandou (Canala). – Taxonomy: First record from New Caledonia by Whitley (1961: 64); previously reported as *Amphisile* sp. by Jouan (1861: 250), and as *Amphisile scutatum* (non Linnaeus, 1758) by Jouan (1863: 183). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], 10, 14. Depth: 1–20 m. Marine species.

Dactylopteridae

Dactyloptena orientalis (Cuvier, 1829) – Grondin volant. – Taxonomy: First record from New Caledonia by Whitley (1961: 64). AMS and IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], [12], 14; AU: 17; NZ: 23. Depth: 1–100 m. Marine species.

Scorpaenidae

Caracanthus maculatus (Gray, 1831). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 31), Rivaton & Richer de Forges (1990: 26), and Kulbicki & Williams (1997: 13). IRDNC, SMNS and USNM material. – Distribution: NC: [5], [7], 8, 14; AU: 17. Depth: 1–15 m. Marine species.

Caracanthus unipinna (Gray, 1831). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 31), Rivaton & Richer de Forges (1990: 26), and Kulbicki et al. (1994: 17). IRDNC and USNM material. – Distribution: NC: 1, [5], [7], 8, 14. Depth: 1–15 m. Marine species.

Dendrochirus bellus (Jordan & Hubbs, 1925). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 67) and Poss (1999: 2312). This might be based on a misidentification according to G. R. Allen (personal communication), but we follow Poss (1999) and consider an antiequatorial distribution of the species. IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 10–200 m. Marine species.

Dendrochirus biocellatus (Fowler, 1938). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 67) and Poss (1999: 2313). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–40 m. Marine species.

Dendrochirus brachypterus (Cuvier in Cuvier & Valenciennes, 1829) – Pterois à nageoires courtes, poisson diable. – Taxonomy: First record from New Caledonia as *Pterois brachyptera* by Fourmanoir & Laboute (1976: 162). IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], 14; AU: 17. Depth: 0–70 m. Marine species.

Dendrochirus zebra (Cuvier in Cuvier & Valenciennes, 1829) – Pterois zébré. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 164); previously reported as *Pterois volitans* (non Linnaeus, 1758) by Whitley (1961: 65). AMS, IRDNC and SMNS material. – Distribution: NC: [5], [6], [7], 8, 9, [10], [11], 12, 14; AU: 17, 18. Depth: 1–80 m. Marine species.

Iracundus signifer Jordan & Evermann, 1903. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 67) and Kulbicki et al. (1994: 16). MNHN material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 10–70 m. Marine species.

Neomerinthe megalepis (Fowler, 1938). – Taxonomy: **New record** from New Caledonia (Chesterfield Islands), based on H. Motomura (personal communication, August 2010); reported by Rivaton et al. (1990: 67) and Kulbicki et al. (1994: 16) as *Neomerinthe rufescens* (non Gilbert, 1905). MNHN material. – Distribution: NC: 1, [5], [7]. Depth: 215–505 m. Marine species.

Neomerinthe rotunda Chen, 1981. – Taxonomy: First record from New Caledonia by Rivaton (1989: 148). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 225–295 m. Marine species.

Parascorpaena mcadamsi (Fowler, 1938). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 16); previously listed as *Parascorpaena* sp. by Rivaton et al. (1990: 67). SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 1–37 m. Marine species.

Parascorpaena mossambica (Peters, 1855). – Taxonomy: First record from New Caledonia by Randall (2005a: 118). IRDNC, MNHN and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 1–18 m. Marine species.

Parascorpaena moultoni (Whitley, 1961). – Taxonomy: **New record** from New Caledonia, based on H. Motomura (personal communication, August 2010); previously reported from New Caledonia by Plessis & Fourmanoir (1966c: 142) as *Parascorpaena picta* (non Cuvier [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1829). MNHN material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–15 m. Marine species.

Parascorpaena sp. – Taxonomy: Undescribed species; to be described by H. Motomura (in preparation). MNHN material. – Distribution: NC: [6], [7], 8, [9], [10]. Marine species.

Phenacoscorpius megalops Fowler, 1938. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 67) and Poss (1999: 2328). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12]; NZ: 23. Depth: 68–622 m. Marine species.

Pontinus rhodochrous (Günther, 1872). – Taxonomy: **New record** from New Caledonia, based on H. Motomura (personal communication, August 2010); previously reported by Rivaton et al. (1990: 67) and Kulbicki et al. (1994: 16) as *Pontinus macrocephalus* (non Sauvage, 1882). IRDNC, MNHN and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 25–310 m. Marine species.

Pteroidichthys amboinensis Bleeker, 1856. – Taxonomy: **New record** from New Caledonia, based on H. Motomura (personal communication, August 2010). MNHN material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 3–25 m. Marine species.

Pterois antennata (Bloch, 1787) – Pterois à antennes, poisson diable. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 160–161). – Distribution: NC: 1, [5], [6], 7, 8, 9, [10], 11, 12, 14; AU: 17; NZ: 20. Depth: 2–50 m. Marine species.

Pterois lunulata Temminck & Schlegel, 1843 – Rascasse poule. – Taxonomy: First reliable record from New Caledonia by Poss (1999: 2329); some previous records were based on misidentifications of *Pterois volitans* (Linnaeus, 1758). – Distribution: NC: [5], [6], [7], 8, [9], 10. Depth: 5–40 m. Marine species.

Pterois mombasae (Smith, 1957). – Taxonomy: First record from New Caledonia by Poss (1999: 2330). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 5–60 m. Marine species.

Pterois radiata Cuvier in Cuvier & Valenciennes, 1829 – Pterois à raies blanches, poisson diable. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 67) and Kulbicki & Williams (1997: 13). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 1–30 m. Marine species.

Pterois volitans (Linnaeus, 1758) – Rascasse à longues antennes. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 162). IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], [10], [11], [12]; AU: 18; NZ: 20, 23. Depth: 1–55 m. Marine species.

Rhinopias aphanes Eschmeyer in Eschmeyer, Hirosaki & Abe, 1973 – Poisson scorpion de Merlet. – Taxonomy: Originally described from New Caledonia (Grande Terre) by Eschmeyer in Eschmeyer et al. (1973: 300); also reported as *Rhinopias* sp. by Fourmanoir (1976: 82) and as *Rhinopias frondosa* (non Günther, 1892) by Rivaton et al. (1990: 68). AMS and MNHN material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 5–40 m. Marine species.

Rhinopias eschmeyeri Condé, 1977. – Taxonomy: **New record** from New Caledonia, based on video taken at Nouméa, Grande Terre (Anonymous 2009a). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 18–55 m. Marine species.

Scorpaena bulacephala Motomura, Last & Yearsley, 2005. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 17) and Rivaton & Bourret (1999: 50) as *Scorpaena neglecta* (non Temminck & Schlegel, 1843). IRDNC material. – Distribution: NC: 1, [5], [6], [7], [8], [9], [10], [11], 12; AU: 18. Depth: 100–150 m. Marine species.

Scorpaena onaria Jordan & Snyder, 1900. – Taxonomy: First record from New Caledonia by Motomura et al. (2005: 867–876). CAS and MNHN material. – Distribution: NC: 1, [5], [7], 13, 14; AU: 17; NZ: 20, 23, 25. Depth: 223–500 m. Marine species.

Scorpaenodes albaiensis (Evermann & Seale, 1907). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 68) and Kulbicki et al. (1994: 17). MNHN material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 2–15 m. Marine species.

Scorpaenodes corallinus Smith, 1957. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 13). USNM material. – Distribution: NC: [5], [7], 14. Depth: 0–18 m. Marine species.

Scorpaenodes guamensis (Quoy & Gaimard, 1824) – Rascasse de Guam. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 68), Rivaton & Richer de Forges (1990: 33), and Kulbicki et al. (1994: 17); reported as *Scorpaenodes* sp. 2 by Laboute & Grandperrin (2000: 167). IRDNC, MNHN and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 11, 12, 14; AU: 17, 18; NZ: 20. Depth: 0–15 m. Marine species.

Scorpaenodes hirsutus (Smith, 1957). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 13). IRDNC, MNHN, SMNS and USNM material. – Distribution: NC: [5], [7], 14. Depth: 1–40 m. Marine species.

Scorpaenodes kelloggi (Jenkins, 1903). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 13). IRDNC, SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, 9, [10], 14. Depth: 0–24 m. Marine species.

Scorpaenodes minor (Smith, 1958). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 17); also reported in the same paper as '*Scorpaenodes brocki*?'. IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 1–18 m. Marine species.

Scorpaenodes parvipinnis (Garrett, 1864). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 68) and Kulbicki et al. (1994: 17). IRDNC, MNHN and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14; AU: 17. Depth: 1–49 m. Marine species.

Scorpaenodes scaber (Ramsay & Ogilby, 1886). – Taxonomy: First record from New Caledonia as *Scorpaenodes scabra* by Rivaton et al. (1990: 68) and Kulbicki et al. (1994: 17). IRDNC, MNHN and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14; AU: 17, 18; NZ: 20, 23. Depth: 3–30 m. Marine species.

Scorpaenodes varipinnis Smith, 1957 – Rascasse rouge. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 158). IRDNC, MNHN and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–100 m. Marine species.

Scorpaenopsis diabolus (Cuvier, 1829). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 68) and Kulbicki et al. (1994: 17). MNHN and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14; AU: 17. Depth: 1–70 m. Marine species.

Scorpaenopsis eschmeyeri Randall & Greenfield, 2004. – Taxonomy: Originally described from New Caledonia by Randall & Greenfield (2004: 385–390). BPBM, MNHN and SMNS material. – Distribution: NC: 1, [5], [6], [7], [8], [9], [10]. Depth: 1–24 m. Marine species.

Scorpaenopsis gilchristi (Smith, 1956). – Taxonomy: **New record** from New Caledonia, based on H. Motomura (personal communication, August 2010). MNHN material. – Distribution: NC: 1. Depth: 3–25 m. Marine species.

Scorpaenopsis macrochir Ogilby, 1910 – Rascasse à brosse. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 325); previously reported as

Scorpaenopsis gibbosa (non Bloch & Schneider, 1801) by FOURMANOIR & LABOUTE (1976: 158), and as *Scorpaenopsis* sp. by LABOUTE & GRANDPERRIN (2000: 169). – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 1–75 m. Transitional water and marine.

Scorpaenopsis neglecta Heckel, 1837. – Taxonomy: First record from New Caledonia (Loyalty Islands) by KULBICKI & WILLIAMS (1997: 13). – Distribution: NC: [5], [7], 14. Depth: 1–70 m. Marine species.

Scorpaenopsis papuensis (Cuvier in Cuvier & Valenciennes, 1829) – Rascasse à filaments. – Taxonomy: First record from New Caledonia by RANDALL & ESCHMEYER (2001: 48–49); previously reported as *Scorpaenopsis cirrhosa* (non Thunberg, 1793) by FOURMANOIR & LABOUTE (1976: 158) and as *Scorpaenopsis oxycephala* (non Bleeker, 1849) by RIVATON et al. (1990: 68). MNHN material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14; AU: 17. Depth: 2–40 m. Marine species.

Scorpaenopsis possi Randall & Eschmeyer, 2001. – Taxonomy: Recorded from New Caledonia in original description by RANDALL & ESCHMEYER (2001: 54–59); previously reported as *Scorpaenopsis* sp. by FOURMANOIR & LABOUTE (1976: 160), as *Sebastapistes* sp. by KULBICKI et al. (1994: 17), as *Scorpaenopsis* sp. cf. *venosa* by RIVATON (1989: 143), and as *Scorpaenopsis diabolus* (non Cuvier, 1829) by LABOUTE & GRANDPERRIN (2000: 167). BPBM and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], 12. Depth: 2–55 m. Marine species.

Scorpaenopsis ramaraoi Randall & Eschmeyer, 2001. – Taxonomy: First record from New Caledonia (Grande Terre) by MOTOMURA (2002). MUFS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–60 m. Marine species.

Scorpaenopsis venosa (Cuvier [ex Russell], 1829) – Lappies. – Taxonomy: First record from New Caledonia (Grande Terre) by FRICKE (1999: 162–163). MNHN and SMNS material. – Distribution: NC: [5], [6], [7], [8], [9], 10. Depth: 2–95 m. Marine species.

Scorpaenopsis vittapinna Randall & Eschmeyer, 2001. – Taxonomy: Recorded from New Caledonia (Chesterfield Islands) in original description by RANDALL & ESCHMEYER (2001: 71–74); previously reported as *Scorpaenopsis brevifrons* (non Eschmeyer & Randall, 1975) by KULBICKI et al. (1994: 17). BPBM and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 0–28 m. Marine species.

Sebastapistes coniorta Jenkins, 1903. – Taxonomy: First record from New Caledonia (Loyalty Islands) by FRICKE & KULBICKI (2006: 325). SMNS material. – Distribution: NC: [5], [7], 14. Depth: 0–25 m. Marine species.

Sebastapistes cyanostigma (Bleeker, 1856). – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 17); previously reported as *Sebastapistes albobrunea* by RIVATON et al. (1990: 68). IRDNC and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–30 m. Marine species.

Sebastapistes fowleri (Pietschmann, 1934). – Taxonomy: First record from New Caledonia as *Scorpaenodes fowleri* by RIVATON et al. (1990: 68), and as "*Scorpaenopsis*" *fowleri* by KULBICKI et al. (1994: 17). BPBM, IRDNC and SMNS material. – Distribution: NC: 1, [5], [7], 8, 14, 17. Depth: 1–61 m. Marine species.

Sebastapistes galactacma Jenkins, 1903. – Taxonomy: First record from New Caledonia (Loyalty Islands) by FRICKE & KULBICKI (2006: 325). SMNS material. – Distribution: NC: [5], [7], 14. Depth: 0–200 m. Marine species.

Sebastapistes mauritiana (Cuvier in Cuvier & Valenciennes, 1829) – Rascasse de Suez. – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 13). IRDNC, SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–10 m. Marine species.

Sebastapistes strongia (Cuvier in Cuvier & Valenciennes, 1829). – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 13); previously reported as *Sebastapistes bynoensis* by WHITLEY (1961: 65), and as *Sebastapistes oglinus* by PLESSIS & FOURMANOIR (1966c: 142). IRDNC, MNHN, SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], 12, 14. Depth: 0–18 m. Marine species.

Sebastapistes tinkhami (Fowler, 1946). – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 17). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [7], 8, 14. Depth: 0–10 m. Marine species.

Taenianotus triacanthus Lacepède, 1802 – Rascasse. – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 171). – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 5–40 m. Marine species.

Setarchidae

Ectreposebastes imus Garman, 1899. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 67) and POSS (1999: 2314). – Distribution: NC: 4, [5], [7]. Depth: 150–2000 m. Marine species.

Setarches guentheri Johnson, 1862 – Rascasse serran. – Taxonomy: First record from New Caledonia by FOURMANOIR (1976: 82); previously reported as *Setarches guentheri longiceps* by FOURMANOIR (1971b: 114, 117). IRDNC material. – Distribution: NC: 1, [5], [6], [7], [8], [9], [10], [11], 12, 14. Depth: 150–780 m. Marine species.

Setarches longimanus (Alcock, 1894). – Taxonomy: First record from New Caledonia by RIVATON (1989: 151). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 180–704 m. Marine species.

Sebastidae

Helicolenus avius Abe & Eschmeyer, 1972. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 67). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 450–600 m. Marine species.

Neosebastidae

Neosebastes capricornis Motomura, 2004. – Taxonomy: Originally described from New Caledonia (Grande Terre) by MOTOMURA (2004: 19). MNHN material (holotype). – Distribution: NC: [5], [7], 13. Depth: 330 m. Marine species.

Synanceiidae

Erosa erosa (Cuvier [ex Langsdorf] in Cuvier & Valenciennes, 1829). – Taxonomy: First record from New Caledonia by RIVATON (1989: 143). IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 30–85 m. Marine species.

Inimicus caledonicus (Sauvage, 1878) – Rascasse ennemie. – Taxonomy: Originally described from New Caledonia as *Pelor caledonicum* by Sauvage (1878: 147). AMS and QM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 20–78 m. Marine species.

Inimicus didactylus (Pallas, 1769). – Taxonomy: First record from New Caledonia as *Scorpaena didactyla* by Jouan (1861: 255). IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 5–80 m. Marine species.

Minous monodactylus (Bloch & Schneider, 1801). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73), Rivaton & Richer de Forges (1990: 34), and Poss (1999: 2319). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 5–55 m. Marine species.

Minous pusillus Temminck & Schlegel, 1843. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73) and Poss (1999: 2320). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 30–110 m. Marine species.

Minous trachycephalus (Bleeker, 1854). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 73), Rivaton & Richer de Forges (1990: 35), and Poss (1999: 2320). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 11–46 m. Marine species.

Synanceia horrida (Linné, 1766). – Taxonomy: First record from New Caledonia (Grande Terre) as *Scorpaena horrida* by Jouan (1861: 255). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–12 m. Transitional water and marine.

Synanceia verrucosa Bloch & Schneider, 1801 – Synancée verruqueuse. – Taxonomy: First record from New Caledonia as *Synanceichthys verrucosa* by Plessis & Fourmanoir (1966c: 142). IRDNC material. – Distribution: NC: 1, [5], 6, 7, 8, 9, [10], [11], [12]; AU: 17. Depth: 0–30 m. Transitional water and marine.

Tetrarogidae

Ablabys taenianotus (Cuvier [ex Commerson], 1829). – Taxonomy: First record from New Caledonia as *Amblyapistus taenianotus* by Rivaton (1989: 144). IRDNC and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18. Depth: 20–78 m. Marine species.

Neocentropogon trimaculatus Chan, 1966. – Taxonomy: First record from New Caledonia by Rivaton (1989: 148). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 203–300 m. Marine species.

Ocosia apia Poss & Eschmeyer, 1975. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 143, 148). – Distribution: NC: 1, [5], [7]; NZ: 20. Depth: 29–350 m. Marine species.

Paracentropogon longispinis (Cuvier in Cuvier & Valenciennes, 1829). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 67) and Kulbicki et al. (1994: 16). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 2–70 m. Marine species.

Richardsonichthys leucogaster (Richardson, 1848). – Taxonomy: First record from New Caledonia by Rivaton (1989: 143). IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 56–90 m. Marine species.

Tetraroge barbata (Cuvier in Cuvier & Valenciennes, 1829). – Taxonomy: First record from New Caledonia by Myers (1999: 102); previously listed as *Tetraroge* sp. by Rivaton et al. (1990: 68). SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 11, [12]. Depth: 0–10 m. Freshwater, transitional water and marine.

Plectrogenidae

Plectrogenium nanum Gilbert, 1905. – Taxonomy: First record from New Caledonia by Fourmanoir & Rivaton (1979: 421). IRDNC material. – Distribution: NC: [5], [6], [7], [8], [9], [10], [11], 12; NZ: 20, 23. Depth: 250–650 m. Marine species.

Aploactinidae

Aploactis aspera (Richardson, 1845). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 23) and Wantiez (1992: 946). – Distribution: NC: 5, [7], 8. Depth: 0–10 m. Marine species.

Cocotropus dermacanthus (Bleeker, 1852). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Kulbicki et al. (1994: 17). – Distribution: NC: 1, [5], [7]. Depth: 40–80 m. Marine species.

Cocotropus richeri Fricke, 2004. – Taxonomy: Originally described from New Caledonia (Loyalty Islands) by Fricke (2004a: 4–6). MNHN material (holotype). – Distribution: NC: [5], [7], 14. Depth: 65–116 m. Marine species.

Erisphex pottii (Steindachner, 1896). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 151). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 10–64 m. Marine species.

Neoaploactis tridorsalis Eschmeyer & Allen, 1978. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 13). USNM material. – Distribution: NC: [5], [7], 14. Depth: 8–30 m. Marine species.

Paraploactis sp. (cf. *kagoshimensis*). – Taxonomy: Recorded from New Caledonia as *Paraploactis kagoshimensis* (non Ishikawa, 1904) and *Erisphex obbesi* (non Weber, 1913) by Rivaton et al. (1990: 23), as *Paraploactis* sp. by Kulbicki et al. (1994: 17), and as Scorpaenidae indéterminée 3 by Laboute & Grandperrin (2000: 172). Specimens under study by Stuart G. Poss according to Randall (2005a: 130). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 10–40 m. Marine species.

Paraploactis trachyderma Bleeker, 1865. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 23) and Kulbicki & Wantiez (1990: 125). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–20 m. Marine species.

Triglidae

**Lepidotrigla annamarae* Cerro & Lloris, 1997. – Taxonomy: Originally described from New Caledonia by Cerro & Lloris (1997: 100–103); previously reported as *Lepidotrigla* sp. by Fourmanoir & Rivaton (1979: 422). MNHN material. – Distribution: NC: 5, [6], [7], [8], 9, 10. Depth: 415–580 m. Marine species.

Lepidotrigla grandis Ogilby, 1910. – Taxonomy: First record from New Caledonia (off eastern Grande Terre) by Cerro & Lloris (1997: 103). MNHN material. – Distribution: NC: [5], [6], [7], [8], 9, [10]. Depth: 330–335 m. Marine species.

**Lepidotrigla musorstom* Cerro & Lloris, 1997. – Taxonomy: Originally described from New Caledonia (Chesterfield Islands) by Cerro & Lloris (1997: 103–108); previously reported as *Lepidotrigla* sp. by Rivaton (1989: 151, part). AMS, BMNH, IIPB, IZUA, MNHN, NSMT and USNM material. – Distribution: NC: 1, [5], [7]. Depth: 250–340 m. Marine species.

Lepidotrigla nana Cerro & Lloris, 1997. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Cerro & Lloris (1997: 108–111); previously reported as *Lepidotrigla* sp. by Rivaton (1989: 151, part). AMS, BMNH, IIPB, MNHN and USNM material. – Distribution: NC: 1, [5], [7]. Depth: 290–310 m. Marine species.

**Lepidotrigla sereti* Cerro & Lloris, 1997. – Taxonomy: Originally described from New Caledonia (off Bellona Reefs, East Coral Sea) by Cerro & Lloris (1997: 111–114); previously reported as *Lepidotrigla* sp. by Rivaton (1989: 151, part). BMNH, IIPB and MNHN material. – Distribution: NC: 1, [5], [7]. Depth: 250–276 m. Marine species.

Lepidotrigla vaubani Cerro & Lloris, 1997. – Taxonomy: Originally described from New Caledonia (Récif de Cook) as *Lepidotrigla alcocki vaubani* by Cerro & Lloris (1997: 99–100). MNHN material (holotype). – Distribution: NC: 5, [7]. Depth: 215 m. Marine species.

Pterygotrigla andertoni Waite, 1910. – Taxonomy: First record from New Caledonia by Richards (1999: 2372); previously reported as *Pterygotrigla picta* (non Günther, 1880) by Cerro & Lloris (1997: 115–117). MNHN material. – Distribution: NC: [5], [7], 13; AU: [18]; NZ: [21], 23, [24]. Depth: 90–500 m. Marine species.

Pterygotrigla macrolepidota (Kamohara, 1938). – Taxonomy: First record from New Caledonia by Cerro & Lloris (1997: 115). MNHN material. – Distribution: NC: [5], [6], [7], [8], [9], [10], [11], 12. Depth: 200–500 m. Marine species.

Pterygotrigla megalops (Fowler, 1938). – Taxonomy: First record from New Caledonia by Cerro & Lloris (1997: 114). MNHN and SMNS material. – Distribution: NC: [5], [7], 14. Depth: 340–500 m. Marine species.

Pterygotrigla multiocellata (Matsubara, 1937). – Taxonomy: First record from New Caledonia by Cerro & Lloris (1997: 114). MNHN and SMNS material. – Distribution: NC: [5], [7], 14. Depth: 250–500 m. Marine species.

**Pterygotrigla robertsi* Cerro & Lloris, 1997. – Taxonomy: Originally described from New Caledonia (Norfolk Ridge) by Cerro & Lloris (1997: 117–119). MNHN material (holotype). – Distribution: NC: [5], [7], 13. Depth: 420–460 m. Marine species.

Pterygotrigla tagala (Herre & Kauffman, 1952). – Taxonomy: First record from New Caledonia by Cerro & Lloris (1997: 119–120); previously reported as *Pterygotrigla* sp. by Rivaton (1989: 151). MNHN and SMNS material. – Distribution: NC: 1, [5], [7]. Depth: 99–350 m. Marine species.

Peristediidae

Paraheminodus longirostralis Kawai, Nakaya & Séret, 2008. – Taxonomy: Originally described from New Caledonia (Loyalty Islands) by Kawai et al. (2008). HUMZ and NSMT material. – Distribution: NC: [5], [7], 14. Depth: 412–467 m. Marine species.

Paraheminodus murrayi (Günther, 1880). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Cerro & Lloris (1997: 95). MNHN material. Taxonomic decision of Cerro & Lloris (1997: 95), who, however, found slight differences between Chesterfield Islands specimens and the holotype. Chesterfield Islands populations may represent a different species. – Distribution: NC: 1, [5], [7]. Depth: 360–710 m. Marine species.

Peristedion liorhynchus (Günther, 1872). – Taxonomy: First record from New Caledonia by Richards (1999: 2370); previously reported as *Peristedion picturatum* by Cerro & Lloris (1997: 95–96). MNHN material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 140–380 m. Marine species.

Peristedion moluccense Bleeker, 1851. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Cerro & Lloris (1997: 96); previously reported as *Satyrichthys welchi* (non Herre, 1925) by Rivaton (1989: 151). MNHN material. – Distribution: NC: 1, [5], [7]. Depth: 330–390 m. Marine species.

Satyrichthys orientale (Fowler, 1938). – Taxonomy: First record from New Caledonia (Grande Terre) by Cerro & Lloris (1997: 96–97); previously reported as *Peristedion pothumaluvae* (non Deraniyagala, 1936) by Rivaton et al. (1990: 76). MNHN material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 497–510 m. Marine species.

Satyrichthys quadratorostratus (Fourmanoir & Rivaton, 1979). – Taxonomy: Originally described from New Caledonia as *Peristedion quadratorostratus* by Fourmanoir & Rivaton (1979: 422). MNHN and NMNZ material. – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], 12, 13. Depth: 360–415 m. Marine species.

Satyrichthys rieffeli (Kaup, 1859). – Taxonomy: First record from New Caledonia by Richards (1999: 2381). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 65–600 m. Marine species.

Bembridae

Bembradium sp. (undescribed). – Taxonomy: Reported from New Caledonia (Chesterfield Islands) by Rivaton (1989: 151), Rivaton et al. (1990: 61), and Kulbicki et al. (1994: 18). – Distribution: NC: 1, [5], [7]. Depth: 348 m. Marine species.

**Bembradium furici* Fourmanoir & Rivaton, 1979. – Taxonomy: Originally described from New Caledonia by Fourmanoir & Rivaton (1979: 419–421). IRDNC and MNHN material. – Distribution: NC: [5], [7], 12. Depth: 360–400 m. Marine species.

Bembradium roseum Gilbert, 1905. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 61) and Rivaton & Bourret (1999: 50). IRDNC material. – Distribution: NC: [5], [7], 12. Depth: 138–800 m. Marine species.

Platycephalidae

Cociella punctata (Cuvier in Cuvier and Valenciennes, 1829). – Taxonomy: **New record** from New Caledonia; previously reported as *Thysanophrys crocodilus* (non Cuvier [ex Tilesius] in Cuvier & Valenciennes 1829) by Plessis & Fourmanoir (1966c: 142). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 1–100 m. Transitional water and marine.

Cymbacephalus beauforti (Knapp, 1973). – Taxonomy: First record from New Caledonia by Knapp (1999: 2394); previously reported as *Cociella crocodilus* (non Tilesius, 1812) by Whitley (1961: 64). AMS and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–10 m. Marine species.

Cymbacephalus nematophthalmus (Günther, 1860) – Poisson crocodile, tête plate. – Taxonomy: **New record** from New Caledonia; previously reported as *Platycephalus longiceps* (non Cuvier in Cuvier & Valenciennes, 1829) by Fourmanoir & Laboute (1976: 166). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–20 m. Transitional water and marine.

Cymbacephalus staigeri (Castelnau, 1875). – Taxonomy: First record from New Caledonia as *Suggrundus staigeri* by Rivaton et al. (1990: 61) and Kulbicki et al. (1993: 27). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 10–46 m. Marine species.

Onigocia bimaculata Knapp, Imamura & Sakashita, 2000. – Taxonomy: Recorded from New Caledonia (Grande Terre) in original description by Knapp et al. (2000: 3–8); previously reported as *Onigocia* sp. 1 by Kulbicki et al. (1994: 18), and as *Onigocia* sp. by Wantiez & Kulbicki (1995: 227). MNHN and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 3–30 m. Marine species.

**Onigocia lacrimalis* Imamura & Knapp, 2009. – Taxonomy: Originally described from New Caledonia (Chesterfield Islands) by Imamura & Knapp (2009: 24–27); previously reported as *Onigocia* sp. by Rivaton (1989: 151), and as *Onigocia* sp. 3 by Kulbicki et al. (1994: 18). AMS, MNHN and USNM material. – Distribution: NC: 1, [5], [7], [13]; AU: [17], 18. Depth: 111–330 m. Marine species.

Onigocia macrolepis (Bleeker, 1854). – Taxonomy: First record from New Caledonia by Rivaton (1989: 143). IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 5–130 m. Marine species.

Onigocia pedimacula (Regan, 1908). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 326); previously reported as *Onigocia spinosa* (non Temminck & Schlegel, 1842) by Rivaton (1989: 143). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 15–110 m. Marine species.

Rogadius mcgroutheri Imamura, 2007. – Taxonomy: Originally described from New Caledonia (Grande Terre) by Imamura (2007). AMS and MNHN material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 16–59 m. Marine species.

Rogadius patriciae Knapp, 1987. – Taxonomy: First record from New Caledonia by Knapp (1999: 2411); previously reported as *Rogadius asper* (non Cuvier in Cuvier & Valenciennes, 1829) by Rivaton & Richer de Forges (1990: 63, part). – Distribution: NC: 1, [5], [7]. Depth: 14–100 m. Marine species.

Rogadius pristiger (Cuvier in Cuvier & Valenciennes, 1829). – Taxonomy: First record from New Caledonia by Knapp (1999: 2412); previously reported as *Rogadius asper* (non Cuvier in Cuvier & Valenciennes, 1829) by Rivaton & Richer de Forges (1990: 32, part). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 15–95 m. Marine species.

Rogadius serratus (Cuvier in Cuvier & Valenciennes, 1829). – Taxonomy: First record from New Caledonia by Knapp (1999: 2413). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 11–45 m. Marine species.

Rogadius welanderi (Schultz in Schultz, Woods & Lachner, 1966). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Fricke & Kulbicki (2006: 326–327); previously reported as *Rogadius* sp. by Kulbicki et al. (1994: 18). SMNS material. – Distribution: NC: 1, [5], [7]. Depth: 6–41 m. Marine species.

Sunagocia arenicola (Schultz in Schultz, Woods & Lachner, 1966). – Taxonomy: First record from New Caledonia as *Thysanophrys arenicola* by Fourmanoir & Laboute (1976: 167). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 1–30 m. Marine species.

Sunagocia otaitensis (Cuvier [ex Parkinson] in Cuvier & Valenciennes, 1829). – Taxonomy: First record from New Caledonia as *Thysanophrys otaitensis* by Kulbicki et al. (1994: 18). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 1–40 m. Marine species.

Thysanophrys celebica (Bleeker, 1854). – Taxonomy: First record from New Caledonia as *Platycephalus celebicus* by Rivaton et al. (1990: 61) and Fricke & Kulbicki (2006: 327). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 20–43 m. Marine species.

Thysanophrys chiltonae Schultz in Schultz, Woods & Lachner, 1966 – Platycéphale clin d'œil. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 18). SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 11, [12], 14. Depth: 1–80 m. Marine species.

Hoplichthyidae

Hoplichthys citrinus Gilbert, 1905. – Taxonomy: First record from New Caledonia by Fourmanoir & Rivaton (1979: 421). IRDNC material. – Distribution: NC: 1, 4, 5, [7], 11, 12, 13. Depth: 183–490 m. Marine species.

Ambassidae

Ambassis buruensis Bleeker, 1856. – Taxonomy: First record from New Caledonia by Randall (2005a: 135); previously reported as *Ambassis* sp. by Fourmanoir & Laboute (1976: 292). AMS and IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–2 m. Freshwater, transitional water and marine.

Ambassis interrupta Bleeker, 1852 – Ambache brisée. – Taxonomy: First record from New Caledonia by Weber & Beaufort (1915: 31). IRDNC material. – Distribution: NC: [5], [6], [7], 8, 9, [10]. Depth: 0–2 m. Freshwater, transitional water and marine.

Ambassis miops Günther, 1872 – Ambache. – Taxonomy: First record from New Caledonia by Weber & Beaufort (1915: 31). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–2 m. Freshwater, transitional water and marine.

Howellidae

Bathysphyraenops simplex Parr, 1933. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 24) and Rivaton & Bourret (1999: 318). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 100–500 m. Marine species.

Howella sherborni (Norman, 1930). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 60) and

RIVATON & BOURRET (1999: 318). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 26–950 m. Marine species.

Acropomatidae

Acropoma lecorneti Fourmanoir, 1988. – Taxonomy: Originally described from New Caledonia (Grande Terre) by FOURMANOIR (1988: 259–263). IRDNC and MNHN material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 360 m. Marine species.

Doederleinia berycoides (Hilgendorf, 1879). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 60). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 80–200 m. Marine species.

Neoscombrops pacificus Mochizuki, 1979. – Taxonomy: First record from New Caledonia by RIVATON (1989: 151–152); subsequently reported as *Neoscombrops* sp. by RIVATON & RICHER DE FORGES (1990: 31). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 60–500 m. Marine species.

Synagrops adeni Kotthaus, 1970. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 60) and RIVATON & BOURRET (1999: 316). – Distribution: NC: [5], [6], [7], [8], [9], [10], [11], 12. Depth: 60–600 m. Marine species.

Synagrops bellus (Goode & Bean, 1896). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 60) and RIVATON & BOURRET (1999: 316). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 60–910 m. Marine species.

Synagrops japonicus (Döderlein in Steindachner & Döderlein, 1883). – Taxonomy: First record from New Caledonia by FOURMANOIR & RIVATON (1979: 411). IRDNC material. – Distribution: NC: [5], [6], [7], [8], [9], [10], [11], 12. Depth: 100–800 m. Marine species.

Synagrops philippinensis (Günther, 1880). – Taxonomy: First record from New Caledonia by FOURMANOIR & RIVATON (1979: 411). IRDNC material. – Distribution: NC: 1, [5], [6], [7], [8], [9], [10], [11], 12. Depth: 186–370 m. Marine species.

Symphysanodontidae

Symphysanodon maunaloae Anderson, 1970. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 71), RIVATON & BOURRET (1999: 104) and ANDERSON & SPRINGER (2005: 26–27). IRDNC and NMNZ material. – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12], 13, 14. Depth: 150–500 m. Marine species.

Serranidae

Aethaloperca rogaa (Forsskål in Niebuhr, 1775) – Vieille roga. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 68) and MYERS (1999: 111); previously reported as *Serranus* sp. by JOUAN (1861: 279). – Distribution: NC: [5], [6], 7, 8, [9], [10], 14. Depth: 1–60 m. Transitional water and marine.

Anyperodon leucogrammicus (Valenciennes [ex Reinwardt] in Cuvier & Valenciennes, 1828) – Loche à lignes blanches. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 50); previously reported as *Plectropoma* sp. by JOUAN (1861: 283). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–80 m. Marine species.

Aporops bilinearis Schultz, 1943. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 65) and KULBICKI & WILLIAMS (1997: 13). BPBM, MNHN, SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 1–15 m. Marine species.

Belonoperca chabanaudi Fowler & Bean, 1930 – Perche de Chabanaud. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 50). – Distribution: NC: 5, [6], [7], 8, [9], [10], 14. Depth: 4–50 m. Marine species.

Caprodon schlegelii (Günther, 1859). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 68) and KULBICKI et al. (1994: 18). IRDNC and SMNS material. – Distribution: NC: 1, [5], [7], 14. Depth: 50–220 m. Marine species.

Cephalopholis argus Bloch & Schneider, 1801 – Saumonée, mérou celeste. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 68) and KULBICKI et al. (1993: 27). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–40 m. Marine species.

Cephalopholis aurantia (Valenciennes in Cuvier & Valenciennes, 1828) – Vieille dorée. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 69) and HEEMSTRA & RANDALL (1999: 2540). SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 20–250 m. Marine species.

Cephalopholis boenak (Bloch, 1790) – Petite loche noire. – Taxonomy: First record from New Caledonia as *Cephalopholis boenack* by KULBICKI (1988b: 306); previously reported as *C. formosanus* (non Tanaka, 1911) and *C. pachycentron* by FOURMANOIR & LABOUTE (1976: 52, 53). IRDNC and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10. Depth: 1–64 m. Transitional water and marine.

Cephalopholis igarashiensis Katayama, 1957. – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 490). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 80–250 m. Marine species.

Cephalopholis leopardus (Lacepède [ex Commerson], 1801) – Vielle léopard. – Taxonomy: First record from New Caledonia by FOURMANOIR (1981: 27). – Distribution: NC: 1, [5], 6, 7, 8, [9], [10]. Depth: 1–40 m. Marine species.

Cephalopholis microprion (Bleeker, 1852) – Loche semiponctuée. – Taxonomy: First record from New Caledonia by RANDALL (1987: 103). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–20 m. Marine species.

Cephalopholis miniata (Forsskål in Niebuhr, 1775) – Loche sanguine. – Taxonomy: First record from New Caledonia as *Cephalopholis miniatus* by WHITLEY (1961: 64). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 11, 12, 14. Depth: 2–150 m. Marine species.

Cephalopholis sexmaculata (Rüppell, 1830) – Vielle six taches. – Taxonomy: **New record** from New Caledonia, based on 20 specimens collected by hook and line in the northeastern lagoon, Grande Terre, 20°57'S 165°30'E, in 1996 (M. KULBICKI). – Distribution: NC: [1], [5], [6], 7, 8, [9], [10], [11], [12]; AU: 17. Depth: 2–50 m. Marine species.

Cephalopholis sonnerati (Valenciennes in Cuvier & Valenciennes, 1828) – Loche martiniquaise. – Taxonomy: First record from New Caledonia by KULBICKI (1988b: 306). USNM material. – Distribution: NC: [5], 6, 7, 8, [9], [10], [11], 12, 14. Depth: 10–150 m. Marine species.

Cephalopholis spiloparaea (Valenciennes in Cuvier & Valenciennes, 1828) – Vieille fraise. – Taxonomy: First record from New Caledonia as *Cephalopholis spiloperca* by Kulbicki (1988b: 306); previously reported as *Cephalopholis* sp. by Fourmanoir & Laboute (1976: 54). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 15–108 m. Marine species.

Cephalopholis urodeta (Bloch & Schneider [ex Forster], 1801) – Loche urodèle. – Taxonomy: First record from New Caledonia as *Cephalopholis urodelus* by Whitley (1961: 64); subsequently reported as *Cephalopholis* sp. by Fourmanoir & Laboute (1976: 54). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–60 m. Marine species.

Chelidoperca lecromi Fourmanoir, 1982. – Taxonomy: Originally described from New Caledonia (Chesterfield Islands) by Fourmanoir (1982a: 63–65). IRDNC and MNHN material. – Distribution: NC: 1, [5], [7]. Depth: 295–330 m. Marine species.

Chelidoperca margaritifera Weber, 1913. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 69). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 118 m. Marine species.

Cromileptes altivelis (Valenciennes in Cuvier & Valenciennes, 1828) – Loche truite, loche voile. – Taxonomy: First record from New Caledonia by Whitley (1961: 64). AMS material. – Distribution: NC: 5, 6, 7, 8, [9], 10. Depth: 1–40 m. Marine species.

Diploprion bifasciatum Cuvier [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1828 – Diploprion à deux bandes, loche savon. – Taxonomy: First record from New Caledonia by Whitley (1961: 64). AMS and IRDNC material. – Distribution: NC: 5, 6, 7, 8, 9, 10; AU: 17. Depth: 1–18 m. Marine species.

Epinephelus areolatus (Forsskål in Niebuhr, 1775) – Loche aréolée. – Taxonomy: First record from New Caledonia by Borodin (1932: 79); also reported as *Serranus angularis* by Borodin (1932: 79). IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], 10, [11], [12]; AU: 17. Depth: 6–200 m. Marine species.

Epinephelus chlorostigma (Valenciennes in Cuvier & Valenciennes, 1828) – Loche pintade. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 56). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 4–300 m. Transitional water and marine.

Epinephelus coeruleopunctatus (Bloch, 1790) – Loche à tâches blanches. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 56); previously reported as *Epinephelus hoevenii* by Whitley (1961: 64). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], 10, 14. Depth: 0–65 m. Marine species.

Epinephelus coioides (Hamilton, 1822) – Mérou à tâches oranges. – Taxonomy: First record from New Caledonia by Tholloт (1996a: 9); previously reported as *Epinephelus suillus* by Rivaton et al. (1990: 69) and Kulbicki et al. (1993: 28). – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 0–100 m. Transitional water and marine.

Epinephelus corallicola (Valenciennes [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1828) – Mérou corail. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 127). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 1–30 m. Transitional water and marine.

Epinephelus cyanopodus (Richardson, 1846) – Loche bleue, loche morue. – Taxonomy: First record from New Caledonia by Kulbicki & Mou-Tham (1987: 17) and Kulbicki (1988a: 93); previously reported as *Serranus holdtii* by Borodin (1932: 79), as *Epinephelus hoedti* by Plessis & Fourmanoir (1966c: 126–127), and as *Epinephelus kohleri* by Palmer (1970: 222–223). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 2–150 m. Marine species.

Epinephelus fuscoguttatus (Forsskål in Niebuhr, 1775) – Loche marbré. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 69) and Wantiez (1992: 947); previously reported as *Epinephelus horridus* by Schultz in Schultz et al. (1966: 150–151). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10]. Depth: 0–60 m. Marine species.

Epinephelus hexagonatus (Bloch & Schneider [ex Forster], 1801) – Loche à hexagones. – Taxonomy: First record from New Caledonia as *Serranus hexagonatus* by Borodin (1932: 79). IRDNC, SMNS and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], 10, 11, 12, 14. Depth: 0–30 m. Marine species.

Epinephelus howlandi (Günther, 1873) – Mérou selle noir. – Taxonomy: First record from New Caledonia by Borodin (1932: 79); subsequently reported as *Epinephelus corallicola* (non Valenciennes [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1828) by Whitley (1961: 64), and as *Epinephelus spilotus* by Fourmanoir (1981: 27). AMS and IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17. Depth: 1–37 m. Marine species.

Epinephelus lanceolatus (Bloch, 1790) – Loche géante, carite. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 60). IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], 11, [12]; AU: 17. Depth: 0–100 m. Transitional water and marine.

Epinephelus macrospilos (Bleeker, 1855) – Mérou tapis. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 69) and Wantiez (1992: 947). – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14. Depth: 1–30 m. Marine species.

Epinephelus maculatus (Bloch, 1790) – Grisette, loche Uitoé. – Taxonomy: First record from New Caledonia as *Serranus maculatus* by Fowler (1928: 177–178). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 2–100 m. Marine species.

Epinephelus magniscuttis Postel, Fourmanoir & Guézé, 1963 – Loche grosse écaille. – Taxonomy: First record from New Caledonia (Grande Terre) by Fourmanoir & Laboute (1976: 60). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 50–300 m. Marine species.

Epinephelus malabaricus (Bloch & Schneider, 1801) – Mère loche, loche ronde. – Taxonomy: First record from New Caledonia by Kulbicki & Mou-Tham (1987: 17); previously reported as *Serranus stoliczkae* (non Day, 1875) by Borodin (1932: 79) and described as *Epinephelus cylindricus* by Postel (1965a). IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], [10], [11], 12. Depth: 5–150 m. Transitional water and marine.

Epinephelus marginalis (Bloch, 1793) – Loche rouge. – Taxonomy: **New record** from New Caledonia; previously reported as *Serranus* sp. by Jouan (1861: 280), and as *Epinephelus*

fasciatus (non Forsskål in Niebuhr, 1775) by PLESSIS & FOURMANOIR (1966c: 127). Treated as synonym of *Epinephelus fasciatus* (Forsskål in Niebuhr, 1775) by authors. IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, 12, 14; AU: 17, 18. Depth: 1–100 m. Transitional water and marine.

Epinephelus merra Bloch, 1793 – Loche rayon de miel, macabit. – Taxonomy: First record from New Caledonia by WHITLEY (1961: 64). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–50 m. Marine species.

Epinephelus morrhua (Valenciennes in Cuvier & Valenciennes, 1833) – Loche à bandes noires. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 62). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 80–370 m. Marine species.

Epinephelus octofasciatus Griffin, 1926 – Loche plate grise, loche bagnard. – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 19); previously reported as *Epinephelus compressus* by FOURMANOIR & LABOUTE (1976: 57), and as *Epinephelus septemfasciatus* (non Thunberg, 1793) by RIVATON et al. (1990: 69) and SÉRET et al. (1997: 104). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], 12, 14; AU: [17], 18; NZ: 20, 23. Depth: 150–300 m. Marine species.

Epinephelus ongus (Bloch, 1790) – Loche à tâches claires. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 69), RIVATON & RICHER DE FORGES (1990: 34) and WANTIEZ et al. (1997: 222); previously reported as *Epinephelus summana* (non Forsskål in Niebuhr, 1775) by FOURMANOIR & LABOUTE (1976: 64). IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10. Depth: 5–25 m. Transitional water and marine.

Epinephelus polyphekadion (Bleeker, 1849) – Loche crasseuse. – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 19); previously reported as *Epinephelus microdon* by FOURMANOIR & LABOUTE (1976: 63). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17. Depth: 1–46 m. Marine species.

Epinephelus retouti Bleeker, 1868 – Loche rouge du large. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 62). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 20–220 m. Marine species.

Epinephelus rivulatus (Valenciennes in Cuvier & Valenciennes, 1830) – Loche brique. – Taxonomy: First record from New Caledonia by KULBICKI (1988b: 306); previously reported as *Epinephelus rhyncholepis* by FOURMANOIR & LABOUTE (1976: 64). – Distribution: NC: [5], 6, 7, 8, [9], [10], 14; AU: 17, 18; NZ: 23. Depth: 1–150 m. Transitional water and marine.

Epinephelus spilotoceps Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953 – Mérou quatre selles. – Taxonomy: First record from New Caledonia (Grande Terre) by EVANS (2006: 93); previously reported as *Epinephelus* sp. by LABOUTE & GRANDPERRIN (2000: 189). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–30 m. Marine species.

Epinephelus tauvina (Forsskål in Niebuhr, 1775) – Loche mouchetée. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 65); previously reported as *Serranus* No. 57 by JOUAN (1861: 278), and as *Serranus diacanthus* (non Valenciennes in Cuvier & Valenciennes, 1828) by FOWLER (1928: 177). IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], 10, 14; AU: 17. Depth: 5–300 m. Marine species.

Gracila albomarginata (Fowler & Bean, 1930) – Loche à bords blancs. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 65). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 6–120 m. Marine species.

Grammistes sexlineatus (Thunberg, 1792) – Savon à six lignes, loche gingembre. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 66). IRDNC and SMNS material. – Distribution: NC: [5], 6, [7], 8, 9, [10], 14; AU: 17; NZ: 20. Depth: 0–130 m. Transitional water and marine.

Grammistops ocellatus Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 70) and KULBICKI et al. (1994: 19). SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 3–20 m. Marine species.

Liopropoma susumi (Jordan & Seale, 1906). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 70) and KULBICKI et al. (1994: 19). IRDNC and USNM material. – Distribution: NC: 1, [5], [7], 8, 14; AU: 17. Depth: 2–34 m. Marine species.

Liopropoma tonstrinum Randall & Taylor, 1988. – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 14). USNM material. – Distribution: NC: [5], [7], 14. Depth: 11–50 m. Marine species.

Luzonichthys sp. – Taxonomy: Recorded from New Caledonia as *Luzonichthys microlepis* (non Smith, 1955) by RIVATON et al. (1990: 70), and as *Luzonichthys* sp. by KULBICKI et al. (1994: 19). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 5–40 m. Marine species.

Luzonichthys waitei (Fowler, 1931). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 70) and KULBICKI & WILLIAMS (1997: 14); previously described as *Luzonichthys robustus* by FOURMANOIR (1977: 267–269). MNHN and USNM material. – Distribution: NC: [5], [7], 8, 14. Depth: 1–55 m. Marine species.

Luzonichthys whitleyi (Smith, 1955). – Taxonomy: First record from New Caledonia by MYERS (1999: 106). – Distribution: NC: [5], [7], 14. Depth: 0–200 m. Marine species.

**Luzonichthys williamsi* Randall & McCosker, 1992. – Taxonomy: Originally described from New Caledonia (Loyalty Islands) by RANDALL & MCCOSKER (1992: 17). USNM material (holotype). – Distribution: NC: [5], [7], 14. Depth: 21–50 m. Marine species.

Plectranthias foresti Fourmanoir, 1977. – Taxonomy: **New record** from New Caledonia (Lifou, Loyalty Islands), based on SMNS 23755. – Distribution: NC: [5], [7], 14. Depth: 183–260 m. Marine species.

Plectranthias fourmanoiri Randall, 1980. – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 19). – Distribution: NC: 1, [5], [7]. Depth: 5–44 m. Marine species.

Plectranthias kamii Randall, 1980. – Taxonomy: First record from New Caledonia (Grande Terre) by FOURMANOIR (1982b: 94); previously listed as *Plectranthias anthioides* (non Günther, 1872) by RIVATON et al. (1990: 70). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 183–270 m. Marine species.

Plectranthias kelloggi (Jordan & Evermann, 1903). – Taxonomy: First record from New Caledonia by Rivaton (1989: 152); previously described as *Plectranthias kelloggi melanesius* by Randall (1980: 148). BPBM and IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], 12. Depth: 348–360 m. Marine species.

Plectranthias longimanus (Weber, 1913). – Taxonomy: First record from New Caledonia as *Pteranthias longimanus* by Plessis & Fourmanoir (1966c: 25). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], 12, 14. Depth: 6–75 m. Marine species.

Plectranthias megalophthalmus Fourmanoir & Randall, 1979. – Taxonomy: Originally described from New Caledonia by Fourmanoir & Randall (1979: 316–318). BPBM material. – Distribution: NC: [5], [6], [7], [8], [9], [10], [11], 12, 14. Depth: 300–360 m. Marine species.

Plectranthias nanus Randall, 1980. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 14). IRDNC, SMNS and USNM material. – Distribution: NC: [5], [7], 14. Depth: 3–130 m. Marine species.

Plectranthias randalli Fourmanoir & Rivaton, 1980. – Taxonomy: Originally described from New Caledonia (Chesterfield Islands) by Fourmanoir & Rivaton (1980). MNHN material (holotype). – Distribution: NC: 1, [5], [7]. Depth: 80–300 m. Marine species.

**Plectranthias retrofasciatus* Fourmanoir & Randall, 1979. – Taxonomy: Originally described from New Caledonia by Fourmanoir & Randall (1979: 318–321). BPBM material (holotype). – Distribution: NC: [5], 6, [7]. Depth: 200 m. Marine species.

Plectranthias rubrifasciatus Fourmanoir & Randall, 1979. – Taxonomy: Originally described from New Caledonia by Fourmanoir & Randall (1979: 321–324). BPBM material (holotype). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 100–200 m. Marine species.

Plectranthias wheeleri Randall, 1980. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 327). SMNS material. – Distribution: NC: [5], [7], 14. Depth: 100–236 m. Marine species.

Plectranthias winniensis (Tyler, 1966). – Taxonomy: First record from New Caledonia by Randall (1980: 182–183). MNHN and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 11, [12], 14. Depth: 23–116 m. Marine species.

Plectropomus areolatus Rüppell, 1830 – Mérou queue carrée. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 70). This record needs additional confirmation. – Distribution: NC: [5], [6], [7], 8, [9], 10. Depth: 1–20 m. Marine species.

Plectropomus laevis (Lacepède [ex Commerson], 1801) – Saumonée grosse race, barbonne, indépendante. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 70) and Kulbicki et al. (1994: 19); previously reported as *Plectropomus melanoleucus* by Fourmanoir & Laboute (1976: 68) and as *Plectropomus maculatus* (non Bloch, 1790) by Whitley (1961: 65). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 4–100 m. Marine species.

Plectropomus leopardus (Lacepède, 1802) – Saumonée léopard; N'goué, Ouimiié (Ile Ouen). – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 66); previously reported as *Plectropoma* spp. by Jouan (1861: 282–285). AMS, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, 12, 14. Depth: 3–100 m. Marine species.

Pogonoperca punctata (Valenciennes in Cuvier & Valenciennes, 1830) – Savon barbu. – Taxonomy: First record from New Caledonia by Kulbicki (1988b: 306). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 10–216 m. Marine species.

Pseudanthias bicolor (Randall, 1979). – Taxonomy: First record from New Caledonia as *Anthias (Microlabrichthys) bicolor* by Randall (1979: 4–7). AMS, BMNH, BPBM and IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 5–68 m. Marine species.

Pseudanthias cooperi (Regan, 1902). – Taxonomy: First record from New Caledonia (Grande Terre) by Laboute & Grandperrin (2000: 197); also reported in the same paper (p. 203) as Anthiinae indéterminée 3. IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 10–91 m. Marine species.

Pseudanthias elongatus (Franz, 1910). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 70), Rivaton & Richer de Forges (1990: 34) and Kulbicki et al. (1994: 19). This species has an antiequatorial distribution, otherwise distributed in the Northwest Pacific. – Distribution: NC: 1, [5], [7], 8. Depth: 60–100 m. Marine species.

Pseudanthias engelhardi (Allen & Starck, 1982). – Taxonomy: **New record** from New Caledonia (Loyalty Islands); previously reported in original description of *Pseudanthias carlsoni* by Randall & Pyle (2001: 20–23); the latter species being a junior synonym of *P. engelhardi* according to Allen & Erdmann (in preparation) (G. R. Allen, personal communication, May 2010). BPBM material. – Distribution: NC: [5], [7], 14. Depth: 37–73 m. Marine species.

Pseudanthias flavicauda Randall & Pyle, 2001. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 327); previously reported as 'Anthiinae indéterminée 2' by Laboute & Grandperrin (2000: 203). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 30–61 m. Marine species.

Pseudanthias hypselosoma Bleeker, 1878. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 70), Rivaton & Richer de Forges (1990: 34) and Kulbicki et al. (1993: 28). IRDNC and USNM material. – Distribution: NC: 1, 5, [6], 7, 8, 9, 10, 14. Depth: 6–50 m. Marine species.

Pseudanthias lori (Lubbock & Randall in Fourmanoir & Laboute, 1976). – Taxonomy: Originally described from New Caledonia as *Anthias (Microlabrichthys) lori* by Lubbock & Randall in Fourmanoir & Laboute (1976: 287). AMS, ANSP, MNHN and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 7–70 m. Marine species.

Pseudanthias pascalus (Jordan & Tanaka, 1927). – Taxonomy: First record from New Caledonia as *Anthias pascalus* by Fourmanoir & Laboute (1976: 286). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 14. Depth: 5–60 m. Marine species.

Pseudanthias pictilis (Randall & Allen, 1978). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990:

70) and KULBICKI & WILLIAMS (1997: 14). USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 12–40 m. Marine species.

Pseudanthias pleurotaenia (Bleeker, 1857). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 71) and MYERS (1999: 108). – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 10–180 m. Marine species.

Pseudanthias randalli (Lubbock & Allen, 1978). – Taxonomy: A species reported from New Caledonia (Grande Terre) as *Anthias bimaculatus* (non Smith, 1955) by FOURMANOIR & LABOUTE (1976: 286) most probably represents this species. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 15–70 m. Marine species.

Pseudanthias rubrizonatus (Randall, 1983). – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 14). IRDNC and USNM material. – Distribution: NC: [5], [7], 14. Depth: 20–133 m. Marine species.

**Pseudanthias rubrolineatus* (Fourmanoir & Rivaton, 1979). – Taxonomy: Originally described from New Caledonia by FOURMANOIR & RIVATON (1979: 413–414). MNHN material (holotype). – Distribution: NC: [5], 6, [7], [8], [9]. Depth: 400 m. Marine species.

Pseudanthias squamipinnis (Peters, 1855). – Taxonomy: First record from New Caledonia as *Anthias squamipinnis* by FOURMANOIR (1976: 59). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 14; AU: 17, 18. Depth: 0–55 m. Marine species.

Pseudanthias ventralis (Randall, 1979). – Taxonomy: Recorded from New Caledonia in original description by RANDALL (1979: 12–13). BPBM material. – Distribution: NC: [5], [6], [7], 8, [9], 10, 14. Depth: 26–120 m. Marine species.

**Pseudanthias xanthomaculatus* (Fourmanoir & Rivaton, 1979). – Taxonomy: Originally described from New Caledonia (Grande Terre) as *Anthias xanthomaculatus* by FOURMANOIR & RIVATON (1979: 414–415). MNHN material (holotype). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 200 m. Marine species.

Pseudogramma astigma Randall & Baldwin, 1997. – Taxonomy: First record from New Caledonia as *Pseudogramma astigmum* by FRICKE & KULBICKI (2006: 329). SMNS material. – Distribution: NC: [5], [7], 14. Depth: 10–116 m. Marine species.

Pseudogramma polyacantha (Bleeker, 1856). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 71) and KULBICKI et al. (1994: 19). The gender of the genus is feminine, based on μραμμή (line); therefore, the species name ending must be '*polyacantha*'. BPBM, IRDNC, ROM, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, 9, [10], [11], [12], 14; AU: 17. Depth: 0–61 m. Marine species.

Sacura margaritacea (Hilgendorf, 1879). – Taxonomy: First record from New Caledonia by FOURMANOIR (1971b: 116). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 15–50 m. Marine species.

Saloptia powelli Smith, 1964 – Mérou d'or. – Taxonomy: First record from New Caledonia by FOURMANOIR (1982b: 93). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 140–367 m. Marine species.

Selenanthias analis Tanaka, 1918. – Taxonomy: First record from New Caledonia as *Plectranthias maculatus* by RIVATON (1989: 152). – Distribution: NC: 1, [5], [7]. Depth: 129–225 m. Marine species.

Selenanthias barroi (Fourmanoir, 1982). – Taxonomy: Originally described from New Caledonia (Chesterfield Islands) as *Plectranthias barroi* by FOURMANOIR (1982a: 60–63). MNHN material. – Distribution: NC: 1, [5], [7], 8. Depth: 203–300 m. Marine species.

Serranocirrhitus latus Watanabe, 1949. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 36) and KULBICKI & WILLIAMS (1997: 14); previously reported as *Dactylanthias mcmichaeli* by FOURMANOIR & LABOUTE (1976: 284). IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 15–70 m. Marine species.

Suttonia lineata Gosline, 1960. – Taxonomy: First record from New Caledonia by RANDALL & BALDWIN (1997: 48–50); previously reported as *Suttonia* sp. by RIVATON et al. (1990: 71) and RIVATON & BOURRET (1999: 70). BPBM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 6–31 m. Marine species.

Variola albimarginata Baissac, 1953 – Croissant queue blanche. – Taxonomy: First record from New Caledonia by HEEMSTRA & RANDALL (1999: 2538). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 4–200 m. Marine species.

Variola louti (Forsskål in Niebuhr, 1775) – Saumonée hirondelle, Croissant queue-jaune. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 69). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 3–240 m. Marine species.

Ostracoberycidae

Ostracoberyx dorygenys Fowler, 1934. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 70) and KULBICKI et al. (1994: 19). IRDNC material. – Distribution: NC: 1, [5], [7], 14. Depth: 256–711 m. Marine species.

Callanthiidae

Callanthias australis Ogilby, 1899. – Taxonomy: First record from New Caledonia by RIVATON (1989: 152). – Distribution: NC: 1, [5], [7], 14; AU: [17], [18]; NZ: 20, 21, 23, 24, 25, 29. Depth: 15–365 m. Marine species.

Grammatonotus laysanus Gilbert, 1905. – Taxonomy: First record from New Caledonia by FOURMANOIR (1971c: 492–493). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 170–372 m. Marine species.

Grammatonotus surugaensis Katayama, Yamakawa & Suzuki, 1980. – Taxonomy: First record from New Caledonia by RIVATON (1989: 152). – Distribution: NC: 1, [5], [7]. Depth: 80–120 m. Marine species.

Pseudochromidae

Cypho purpurascens (De Vis, 1884) – Pseudochromis à lignes rouges. – Taxonomy: First record from New Caledonia as *Pseudochromis purpurascens* by RIVATON et al. (1990: 65), RIVATON & RICHER DE FORGES (1990: 33), and KULBICKI et al. (1993: 28); previously reported as *Pseudochromis mccullochi* by FOURMANOIR & LABOUTE (1976: 285). BPBM, MNHN, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 2–40 m. Marine species.

Lubbockichthys multisquamatus (Allen, 1987). – Taxonomy: First record from New Caledonia as *Pseudoplesiops multisquamatus* by KULBICKI & WILLIAMS (1997: 14). USNM material. – Distribution: NC: [5], [7], 14. Depth: 12–65 m. Marine species.

**Ogilbyina salvati* (Plessis & Fourmanoir, 1966) – Pseudochromis à joue tâchetée. – Taxonomy: Originally described from New Caledonia as *Pseudochromis salvati* by PLESSIS & FOURMANOIR (1966b); previously reported as *Pseudochromis novaehollandiae* (non Steindachner, 1879) by WHITLEY (1961: 65). AMS, IRDNC, MNHN and SMNS material. – Distribution: NC: 1, [5], [7], 8, [9], [10], [11], 12. Depth: 0–15 m. Marine species.

Pictichromis coralensis Gill, 2004 – Pseudochromis mi-jaune, mi-violet. – Taxonomy: Recorded from New Caledonia in original description by GILL (2004: 59); previously reported as *Pseudochromis paccagnellae* (non Axelrod, 1973) by FOURMANOIR & LABOUTE (1976: 285), and as *Pseudochromis* sp. by GILL et al. (1996: 99). IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 6–40 m. Marine species.

Pseudochromis cyanotaenia Bleeker, 1857. – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 14). SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, 9, [10], 14. Depth: 0–30 m. Marine species.

Pseudochromis fuscus Müller & Troschel, 1849. – Taxonomy: First record from New Caledonia by GILL (1999: 2574); previously listed as *Pseudochromis aurea* by RIVATON et al. (1990: 65). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 1–30 m. Marine species.

Pseudochromis jamesi Schultz, 1943. – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 14). IRDNC, SMNS and USNM material. – Distribution: NC: [5], [7], 8, 14. Depth: 0–6 m. Marine species.

**Pseudochromis kolythrus* Gill & Winterbottom, 1993. – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) by GILL & WINTERBOTTOM (1993: 2–6). ROM material (holotype). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 18–31 m. Marine species.

Pseudochromis marshallensis Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 65) and MYERS (1999: 121). IRDNC and SMNS material. – Distribution: NC: 5, [6], [7], 8, 9, [10], 11, [12]. Depth: 0–30 m. Marine species.

Pseudochromis tapeinosoma Bleeker, 1853. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 65) and KULBICKI et al. (1994: 20). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 2–60 m. Marine species.

Pseudoplesiops howensis Allen, 1987. – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 20). IRDNC and USNM material. – Distribution: NC: 1, [5], [7], 14; AU: 17. Depth: 3–25 m. Marine species.

Pseudoplesiops immaculatus Gill & Edwards, 2002. – Taxonomy: Recorded from New Caledonia in original description by GILL & EDWARDS (2002: 20–23). MNHN and USNM material. – Distribution: NC: [5], [7], 14. Depth: 2–20 m. Marine species.

Pseudoplesiops rosae Schultz, 1943. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 65) and KULBICKI et al. (1994: 20). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [7], 8, 14. Depth: 3–15 m. Marine species.

Plesiopidae

Acanthoplesiops hiatti Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: **New record** from New Caledonia (Île des Pins), based on SMNS 25447 (1 specimen, Îlot Mwere). – Distribution: NC: [5], [6], [7], [8], [9], [10], [11], 12. Depth: 0–18 m. Marine species.

Assessor macneilli Whitley, 1935. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 61) and KULBICKI & WANTIEZ (1990: 124). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 14. Depth: 2–20 m. Marine species.

Belonepterygion fasciolatum (Ogilby, 1889). – Taxonomy: First record from New Caledonia by WHITLEY (1961: 64). AMS, BPBM, IRDNC, SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], 12, 14; AU: 17. Depth: 0–11 m. Marine species.

Calloplesiops altivelis (Steindachner, 1903). – Taxonomy: First record from New Caledonia by FRICKE & KULBICKI (2006: 329); previously reported as *Calloplesiops* sp. by RIVATON et al. (1990: 61) and RIVATON & RICHER DE FORGES (1990: 32). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 3–50 m. Marine species.

Plesiops coeruleolineatus Rüppell, 1835. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 61) and MOOI (1995: 18–24); previously reported as *Plesiops melas* by PLESSIS & FOURMANOIR (1966c: 126). BPBM, IRDNC, MNHN, SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, 9, [10], 11, [12], 14. Depth: 0–23 m. Marine species.

Plesiops insularis Mooi & Randall, 1991. – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 20); previously reported as *Plesiops* sp. A and as *Plesiops oxycephalus* (non Bleeker, 1855) by RIVATON et al. (1990: 61). BPBM, IRDNC and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 11, 12, 14; AU: 17, 18. Depth: 0–25 m. Marine species.

Plesiops verecundus Mooi, 1995. – Taxonomy: Recorded from New Caledonia (Grande Terre) in original description by MOOI (1995: 57–60). BPBM and MNHN material. – Distribution: NC: [5], [6], [7], 8, 9, [10]. Depth: 0–30 m. Marine species.

Opistognathidae

Opistognathus n. sp. 1. – Taxonomy: Reported from New Caledonia as '*Opistognathus* sp. 1' by LABOUTE & GRANDPERRIN (2000: 385). SMNS material. – Distribution: NC: 1, [6], [7], 8, [9], [10], 14. Depth: 56–210 m. Marine species.

Opistognathus n. sp. 2. – Taxonomy: Reported from New Caledonia as '*Opistognathus* sp. 2' by LABOUTE & GRANDPERRIN (2000: 386). SMNS material. – Distribution: NC: 8, 9. Depth: 0–30 m. Marine species.

Stalix histrio Jordan & Snyder, 1902. – Taxonomy: First record from New Caledonia by RANDALL (2005a: 345). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–25 m. Marine species.

Banjosidae

Banjos banjos (Richardson, 1846). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 27) and Kulbicki et al. (1994: 20). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 50–400 m. Marine species.

Centrarchidae

Micropterus salmoides (Lacepède, 1802) – Black bass, achignan à grande bouche. – Taxonomy: Reported from New Caledonia by Marquet et al. (1997: 29). – Distribution: NC: 10. Depth: 0–2 m. Introduced (originally eastern North America). Freshwater.

Priacanthidae

Cookeolus japonicus (Cuvier in Cuvier & Valenciennes, 1829) – Beauclaire longe aile. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 65) and Kulbicki et al. (1994: 20). – Distribution: NC: 1, [5], [7]. Depth: 40–400 m. Marine species.

Heteropriacanthus cruentatus (Lacepède, 1801) – Beauclaire de roche. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 65) and Kulbicki et al. (1994: 20). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, [7], 8, 14; AU: 17, 18. Depth: 3–300 m. Marine species.

Priacanthus hamrur (Forsskål in Niebuhr, 1775) – Lanterne, gros œil, beau clair. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 112); previously described as *Priacanthus longipinnis* by Borodin (1932: 81). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, 12, 14; AU: 17. Depth: 8–250 m. Marine species.

Priacanthus macracanthus Cuvier in Cuvier & Valenciennes, 1829 – Beauclaire Pacifique. – Taxonomy: First record from New Caledonia by Rivaton (1989: 152). IRDNC material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], [11], [12]; AU: 17. Depth: 20–400 m. Marine species.

Priacanthus sagittarius Starnes, 1988 – Beauclaire aile sagitté. – Taxonomy: First record from New Caledonia by Starnes (1999: 2600). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 60–100 m. Marine species.

Pristigenys meyeri (Günther, 1872) – Beauclaire raie rouges. – Taxonomy: First record from New Caledonia by Starnes (1999: 2601). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 100–200 m. Marine species.

Pristigenys niphonia (Cuvier in Cuvier & Valenciennes, 1829) – Beauclaire bande blanc. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 112, 116). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 80–120 m. Marine species.

Apogonidae

Apogon caudicinctus Randall & Smith, 1988. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 14). SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, 9, 10, 14. Depth: 0–12 m. Marine species.

Apogon crassiceps Garman, 1903. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 23) and Kulbicki et al. (1994: 20); previously reported as *Apogon erythrinus* (non Snyder, 1904) by Plessis & Fourmanoir (1966c: 128), subsequently as *Apogon coccineus* (non Rüppell, 1838) by Rivaton et al. (1990: 23) and Kulbicki & Williams (1997: 14). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], 6, [7], 8, 9, [10], [11], 12, 14; AU: 17, 18. Depth: 0–55 m. Marine species.

Apogon doryssa (Jordan & Seale, 1906). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 23) and Kulbicki et al. (1994: 20). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–15 m. Marine species.

Apogon indicus Greenfield, 2001. – Taxonomy: Recorded from New Caledonia in original description by Greenfield (2001: 465–467); previously reported as *Apogon erythrinus* (non Snyder, 1904) by Kulbicki & Williams (1997: 14). ROM, SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, 9, [10], 11, 12, 14. Depth: 0–8 m. Marine species.

Apogon jenkinsi (Evermann & Seale, 1907). – Taxonomy: **New record** from New Caledonia (Chesterfield Islands); previously reported as *Apogon notatus* (non Houttuyn, 1782) by Rivaton et al. (1990: 24) and Kulbicki et al. (1994: 21). IRDNC material. Taxonomic decision of Allen & Erdmann (in preparation) (G. R. Allen, personal communication, May 2010). – Distribution: NC: 1, [5], [7], 8. Depth: 0–76 m. Marine species.

**Apogon noumeae* Whitley, 1958. – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) by Whitley (1958: 33–34). AMS material. – Distribution: NC: [5], [7], 8. Depth: 0–2 m. Marine species.

Apogon semiornatus Peters, 1876. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 24) and Gon & Randall (2003: 23–24). IRDNC and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 2–30 m. Marine species.

Apogon susanae Greenfield, 2001. – Taxonomy: Recorded from New Caledonia in original description by Greenfield (2001: 467–469). ROM and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], 12, 14. Depth: 0–6 m. Marine species.

Apogon talboti Smith, 1961. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 24) and Kulbicki et al. (1994: 21). SMNS material. – Distribution: NC: 1, [5], [7], 14. Depth: 0–37 m. Marine species.

**Apogonichthyoides euspilotus* (Fraser, 2006). – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) as *Apogon euspilotus* by Fraser (2006: 137–141). CAS material (holotype). Taxonomic decision of Fraser & Allen (2010: 44). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–2 m. Marine species.

Apogonichthys ocellatus (Weber, 1913). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 21). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [7], 8, 14. Depth: 0–5 m. Transitional water and marine.

Apogonichthys perdix Bleeker, 1854. – Taxonomy: First record from New Caledonia as *Apogon perdix* by Rivaton et al. (1990: 24), and as *Apogonichthys perdix* by Kulbicki et al. (1994: 21). SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], 12. Depth: 6–65 m. Marine species.

Archamia fucata (Cantor, 1850). – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 290). IRDNC and USNM material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], 14. Depth: 0–35 m. Marine species.

Archamia leai Waite, 1916. – Taxonomy: First record from New Caledonia by Whitley (1961: 64). AMS, BPBM, IRDNC, SMNS and USNM material. – Distribution: NC: 5, [7], 8, [10], 11; AU: 18. Depth: 0–15 m. Marine species.

Archamia macroptera (Cuvier [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1828) – Apogon bariolé. – Taxonomy: First record from New Caledonia (Grande Terre) by Fricke & Kulbicki (2006: 330); previously reported as *Archamia lineolata* (non Cuvier [ex Ehrenberg] in Cuvier & Valenciennes, 1828) by Whitley (1961: 64). *Archamia lineolata* is endemic to the Red Sea according to Gon & Randall (2003: 29–30). AMS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–15 m. Marine species.

Archamia zosterophora (Bleeker, 1856) – Apogon ceinturé. – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 24) and Kulbicki et al. (1993: 28). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–40 m. Marine species.

Cercamia cladara Randall & Smith, 1988. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Randall (2005a: 197). – Distribution: NC: 1, [5], [7]. Depth: 6–40 m. Marine species.

Cheilodipterus artus Smith, 1961. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 24) and Kulbicki et al. (1994: 21). IRDNC material. – Distribution: NC: 1, 5, 6, [7], 8, [9], [10], 14. Depth: 3–158 m. Marine species.

Cheilodipterus isostigmus (Schultz, 1940). – Taxonomy: First record from New Caledonia (Grande Terre) as *Cheilodipterus isostigma* by Whitley (1961: 64). AMS material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 1–40 m. Marine species.

Cheilodipterus lineatus Lacepède [ex Commerson], 1802 – Apogon à grandes dents. – Taxonomy: **New record** from New Caledonia; previously reported as *Cheilodipterus lachneri* (non Klausewitz, 1959) by Rivaton et al. (1990: 24), Rivaton & Richer de Forges (1990: 24) and Kulbicki et al. (1993: 28), and as *Cheilodipterus macrodon* by Kulbicki & Williams (1997: 15). SMNS and USNM material. Fricke (1999: 233) treated *Centropomus macrodon* Lacepede [ex Commerson], 1802 in the synonymy of *Cheilodipterus lineatus* Lacepède [ex Commerson], 1801, but Gon (1993: 30) and Gon & Randall (2003: 32–33) believe that the latter name is unavailable as a secondary homonym of *Perca lineata* Forsskål in Niebuhr, 1775. The latter is, however, not an independent species description, but a misidentification of *Perca lineata* Linnaeus, 1758, which is now *Plectorhinchus lineatus* (Linnaeus, 1758). *Cheilodipterus lineatus* (sensu Gon & Randall 2003: 31–32) is a synonym of *Cheilodipterus arabicus* (Gmelin, 1789); it is restricted to the western Indian Ocean and Red Sea. As both *Cheilodipterus lineatus* and *C. macrodon* were frequently used, there is no way to retain *C. macrodon*, so that the species must be named *Cheilodipterus lineatus* (see Fricke 2008: 30). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17. Depth: 0–40 m. Marine species.

Cheilodipterus quinquelineatus Cuvier in Cuvier & Valenciennes, 1828 – Apogon à cinq branches. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 291). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], 6, 7, 8, 9, 10, 14; AU: 17. Depth: 0–40 m. Marine species.

Cheilodipterus singapurensis Castelnau in Bleeker, 1859–1860. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 330); previously reported as *Cheilodipterus subulatus* by Rivaton et al. (1990: 24) and Kulbicki et al. (1993: 28). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 1–10 m. Marine species.

Foa fo Jordan & Seale, 1905. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 330); previously reported as *Foa brachygramma* (non Jenkins, 1903) by Rivaton et al. (1990: 24), Rivaton & Richer de Forges (1990: 24) and Kulbicki et al. (1994: 21), and as 'Apogonidae indéterminé 1' by Laboute & Grandperrin (2000: 219). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, 9, [10], [11], 12. Depth: 0–82 m. Marine species.

Fowleria aurita (Valenciennes in Cuvier & Valenciennes, 1831). – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 128–129). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 1–37 m. Marine species.

Fowleria isostigma (Jordan & Seale, 1906). – Taxonomy: First record from New Caledonia as *Apogon isostigmus* by Fourmanoir (1981: 27). IRDNC and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, 9, 10, 14. Depth: 0–30 m. Marine species.

Fowleria marmorata (Alleyne & Macleay, 1877) – Cardinal à ocelle operculaire. – Taxonomy: First record from New Caledonia as *Apogon marmoratus* by Fourmanoir & Laboute (1976: 290). IRDNC and USNM material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–37 m. Marine species.

Fowleria vaiulae (Jordan & Seale, 1906). – Taxonomy: First record from New Caledonia by Randall (2005a: 200–201); previously reported as *Fowleria abocellata* by Rivaton et al. (1990: 24). IRDNC and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 1–25 m. Marine species.

Fowleria variegata (Valenciennes, 1832). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 25), Rivaton & Richer de Forges (1990: 24) and Kulbicki et al. (1994: 21). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, 9, [10]. Depth: 0–27 m. Marine species.

Gymnapogon philippinus (Herre, 1939). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 25) and Kulbicki et al. (1994: 21). – Distribution: NC: 1, [5], [7], 8. Depth: 0–9 m. Marine species.

Gymnapogon urospilotus Lachner in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 21). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [7], 14. Depth: 1–12 m. Marine species.

**Jaydia catalai* (Fourmanoir, 1973). – Taxonomy: Originally described from New Caledonia as *Apogon (Nectamia) catalai* by Fourmanoir (1973: 35–36). Taxonomic decision of T. H. Fraser (G. R. Allen, personal communication, May 2010). MNHN material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 0–15 m. Marine species.

Jaydia ellioti (Day, 1875). – Taxonomy: First record from New Caledonia by Rivaton (1989: 144). IRDNC material. Taxonomic decision according to G. R. Allen (personal

communication, May 2010). – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 18–106 m. Marine species.

Neamia octospina Smith & Radcliffe in Radcliffe, 1912. – Taxonomy: First record from New Caledonia (Grande Terre) by Randall (2005a: 201). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–5 m. Marine species.

Nectamia bandanensis (Bleeker, 1854). – Taxonomy: First record from New Caledonia by Gabrié et al. (2007: 50). – Distribution: NC: 5. Depth: 10–34 m. Marine species.

Nectamia fusca (Quoy & Gaimard, 1825). – Taxonomy: First record from New Caledonia as *Apogon fuscus* by Rivaton et al. (1990: 23) and Kulbicki et al. (1993: 28); previously reported as *Ostorhinchus nubilis* by Plessis & Fourmanoir (1966c: 128), as *Apogon guamensis* by Rivaton et al. (1990: 23) and Kulbicki et al. (1994: 21), and as *Apogon ocellatus* (non Weber, 1913) by Rivaton et al. (1990: 24). BPBM and SMNS material. – Distribution: NC: 1, [5], 6, 7, 8, 9, [10], 14. Depth: 4–14 m. Marine species.

Nectamia luxuria Fraser, 2008. – Taxonomy: Recorded from New Caledonia in original description by Fraser (2008: 26–31); previously reported as *Ostorhinchus guamensis* by Fricke & Kulbicki (2006: 331, part). ROM, SMNS and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–11 m. Marine species.

Nectamia savayensis (Günther, 1872). – Taxonomy: First record from New Caledonia as *Aspiscis savayensis* by Whitley (1961: 64); also reported as *Ostorhinchus guamensis* by Fricke & Kulbicki (2006: 331, part). AMS, IRDNC and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 3–25 m. Marine species.

Nectamia viria Fraser, 2008. – Taxonomy: Recorded from New Caledonia in original description by Fraser (2008: 41–44); previously reported as *Apogon bondanensis* [sic] (non Bleeker, 1852) by Borodin (1932: 79). ROM, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], 10, 11. Depth: 2–8 m. Marine species.

Ostorhinchus amboinensis (Bleeker, 1853). – Taxonomy: First record from New Caledonia by Weber & Beaufort (1915: 32); record confirmed by Marquet et al. (1997: 30). Taxonomic decision according to G. R. Allen (personal communication, May 2010). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–5 m. Freshwater, transitional water and marine.

Ostorhinchus angustatus (Smith & Radcliffe in Radcliffe, 1911). – Taxonomy: First record from New Caledonia as *Lovamia angustata* by Whitley (1961: 64). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 5, [6], 7, 8, [9], 10, 14. Depth: 0–65 m. Marine species.

Ostorhinchus apogonoides (Bleeker, 1856). – Taxonomy: First record from New Caledonia as *Apogon apogonides* by Rivaton et al. (1990: 23) and Kulbicki et al. (1994: 20). IRDNC and USNM material. – Distribution: NC: 1, [5], [7], 8, 14. Depth: 0–60 m. Marine species.

Ostorhinchus aureus (Lacepède [ex Commerson], 1802) – Apogon à queue bandée. – Taxonomy: First record from New Caledonia as *Apogon aureus* by Fourmanoir & Laboute (1976: 288). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, [7], 8, [9], 10, [11], 12, 14. Depth: 1–40 m. Marine species.

Ostorhinchus cladophilos (Allen & Randall, 2002). – Taxonomy: Recorded from New Caledonia (Grande Terre) in original description by Allen & Randall (2002b: 122) as *Apogon cladophilos*. Taxonomic decision according to G. R. Allen (personal communication, May 2010). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 3–20 m. Marine species.

Ostorhinchus capricornis (Allen & Randall, 1993). – Taxonomy: First record from New Caledonia as *Apogon capricornis* by Randall et al. (1997: 507). – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 2–15 m. Marine species.

Ostorhinchus compressus (Smith & Radcliffe in Radcliffe, 1911). – Taxonomy: First record from New Caledonia as *Lovamia compressa* by Whitley (1961: 65). AMS and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 14; AU: 17. Depth: 1–20 m. Marine species.

Ostorhinchus cookii (Macleay, 1881). – Taxonomy: First record from New Caledonia as *Apogon cookii* by Laboute & Grandperrin (2000: 212). AMS, SMNS and USNM material. – Distribution: NC: [5], 6, [7], 8, 9, 10, [11], 12, 14. Depth: 0–5 m. Marine species.

Ostorhinchus cyanosoma (Bleeker, 1853). – Taxonomy: First record from New Caledonia as *Apogon cyanosoma* by Fourmanoir & Laboute (1976: 288). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 0–50 m. Marine species.

Ostorhinchus diversus (Smith & Radcliffe in Radcliffe, 1912). – Taxonomy: First record from New Caledonia (Loyalty Islands) as *Apogon diversus* by Kulbicki & Williams (1997: 14). Validity of the species is questionable (G. R. Allen, personal communication, May 2010); New Caledonian record may belong to a separate, undescribed species. USNM material. – Distribution: NC: [5], [7], 14. Depth: 1–15 m. Marine species.

Ostorhinchus doederleini (Jordan & Snyder, 1901). – Taxonomy: First record from New Caledonia as *Apogon doederleini* by Rivaton et al. (1990: 23) and Kulbicki et al. (1994: 20). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, [6], [7], 8, [9], 10, [11], 12, 14; AU: 17, 18; NZ: 20. Depth: 1–10 m. Marine species.

Ostorhinchus endekataenia (Bleeker, 1852). – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 128). According to G. R. Allen (personal communication, May 2010), this record may be based on a misidentification. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 2–25 m. Marine species.

Ostorhinchus fasciatus (White, 1790). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 23) and Kulbicki et al. (1994: 20). – Distribution: NC: 1, [5], [7], 8. Depth: 2–128 m. Marine species.

Ostorhinchus flavus (Allen & Randall, 1993). – Taxonomy: First record from New Caledonia as *Apogon flavus* by Laboute & Grandperrin (2000: 213). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18. Depth: 10–25 m. Marine species.

Ostorhinchus hyalosoma (Bleeker, 1852). – Taxonomy: First record from New Caledonia (Grande Terre) by Borodin (1932: 79). Taxonomic decision according to G. R. Allen (personal communication, May 2010). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–15 m. Freshwater, transitional water and marine.

Ostorhinchus kiensis (Jordan & Snyder, 1901). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 24)

and KULBICKI & WANTIEZ (1990: 124); subsequently reported as *Apogon* sp. 3 by LABOUTE & GRANDPERRIN (2000: 215). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 0–78 m. Transitional water and marine.

Ostorhinchus lateralis (Valenciennes, 1832). – Taxonomy: First record from New Caledonia (Grande Terre) as *Apogon lateralis* by FOURMANOIR (1981: 27); subsequently listed as *Apogon ceramensis* by RIVATON et al. (1990: 23). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], 10. Depth: 0–3 m. Freshwater, transitional water and marine.

Ostorhinchus melas (Bleeker, 1848). – Taxonomy: First record from New Caledonia (Grande Terre) by FOURMANOIR (1981: 27). Taxonomic decision according to G. R. ALLEN (personal communication, May 2010). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], 10. Depth: 0–2 m. Marine species.

Ostorhinchus nigrofasciatus (Lachner in Schultz, Herald, Lachner, Welander & Woods, 1953). – Taxonomy: First record from New Caledonia as *Apogon nigrofasciatus* by RIVATON et al. (1990: 24), RIVATON & RICHER DE FORGES (1990: 24), and KULBICKI et al. (1994: 21). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], 14. Depth: 1–35 m. Marine species.

Ostorhinchus norfolcensis (Ogilby, 1888). – Taxonomy: First record from New Caledonia as *Apogon norfolcensis* by WHITLEY (1961: 64); subsequently reported as *Apogon* sp. 2 and *Apogon* sp. 4 by LABOUTE & GRANDPERRIN (2000: 215). AMS and SMNS material. – Distribution: NC: 5, 6, [7], 8, [10], 11, 12, 14; AU: 17, 18. Depth: 0–10 m. Marine species.

Ostorhinchus novemfasciatus (Cuvier in Cuvier & Valenciennes, 1828) – Apogon à neuf bandes. – Taxonomy: First record from New Caledonia as *Lovamia novemfasciata* by WHITLEY (1961: 65). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, 9, 10, 14. Depth: 0–5 m. Marine species.

Ostorhinchus poecilopterus (Cuvier [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1828). – Taxonomy: First record from New Caledonia as *Apogon poecilopterus* by RIVATON et al. (1990: 24). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 19–146 m. Marine species.

Ostorhinchus rubrimacula (Randall & Kulbicki, 1998). – Taxonomy: Recorded from New Caledonia as *Apogon rubrimacula* by RANDALL & KULBICKI (1998: 33). BPBM and MNHN material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–33 m. Marine species.

Ostorhinchus sealei (Fowler, 1918). – Taxonomy: First record from New Caledonia (Grande Terre) by FRICKE & KULBICKI (2006: 331). SMNS material. – Distribution: NC: [5], [6], [7], [8], 9, 10. Depth: 3–25 m. Marine species.

Ostorhinchus selas (Randall & Hayashi, 1990). – Taxonomy: First record from New Caledonia as *Apogon selas* by KULBICKI et al. (1994: 21). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 3–72 m. Marine species.

Ostorhinchus septemstriatus (Günther, 1880). – Taxonomy: First record from New Caledonia as *Apogon septemstriatus* by RIVATON (1989: 144). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 18–68 m. Marine species.

Ostorhinchus taeniophorus (Regan, 1908). – Taxonomy: First record from New Caledonia as *Apogon taeniophorus* by RIVATON et al. (1990: 24) and KULBICKI et al. (1994: 21). IRDNC and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, 9, 10, 14. Depth: 0–10 m. Marine species.

Pristiapogon exostigma (Jordan & Starks, 1906). – Taxonomy: First record from New Caledonia as *Apogon exostigma* by FOURMANOIR (1981: 27). IRDNC and SMNS material. – Distribution: NC: 1, [5], 6, [7], 8, 9, 10, 11, 12, 14. Depth: 1–40 m. Marine species.

Pristiapogon fraenatus (Valenciennes, 1832). – Taxonomy: First record from New Caledonia as *Apogon fraenatus* by PLESSIS & FOURMANOIR (1966c: 128); also misidentified as *Apogon exostigma* (non Jordan & Starks, 1906) by FOURMANOIR & LABOUTE (1976: 288). SMNS and USNM material. – Distribution: NC: 1, 5, [6], [7], 8, 9, 10, 11, 12, 14. Depth: 1–25 m. Marine species.

Pristiapogon kallopterus (Bleeker, 1856). – Taxonomy: First record from New Caledonia as *Apogon kallopterus* by FOURMANOIR (1981: 27); previously reported as *Apogon* sp. and *A. snyderi* by FOURMANOIR & LABOUTE (1976: 290); subsequently reported as *Apogon* sp. 7 by LABOUTE & GRANDPERRIN (2000: 216). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17, 18; NZ: 20. Depth: 0–48 m. Marine species.

Pristiapogon taeniopterus (Bennett, 1836). – Taxonomy: First record from New Caledonia (Grande Terre) as *Apogon taeniophorus* by RANDALL (1998: 35). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–42 m. Marine species.

Pristicon trimaculatus (Cuvier in Cuvier & Valenciennes, 1828) – Cardinal à trois points. – Taxonomy: First record from New Caledonia as *Apogon trimaculatus* by FOURMANOIR & LABOUTE (1976: 290); subsequently listed as *Apogon taeniatus* (non Ehrenberg in Cuvier & Valenciennes, 1828) and as *A. koilomatodon* by RIVATON et al. (1990: 24). BPBM, SMNS and USNM material. – Distribution: NC: 1, 5, [6], [7], 8, [9], 10, 14. Depth: 1–34 m. Marine species.

Pseudamia gelatinosa Smith, 1956. – Taxonomy: First record from New Caledonia by FOURMANOIR (1981: 27). IRDNC and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], 10, 14. Depth: 1–64 m. Marine species.

Pseudamia zonata Randall, Lachner & Fraser, 1985. – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 218). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 10–31 m. Marine species.

Pseudamiops gracilicauda (Lachner in Schultz, Herald, Lachner, Welander & Woods, 1953). – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 15); previously listed as *Pseudamiops* sp. by RIVATON et al. (1990: 25). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], [8], [9], [10], [11], 12, 14. Depth: 1–30 m. Marine species.

Rhabdamia cypselura Weber, 1909. – Taxonomy: First record from New Caledonia as *Rhabdamia cypselurus* by RIVATON et al. (1990: 25) and KULBICKI & WANTIEZ (1990: 124). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 3–73 m. Marine species.

Rhabdamia gracilis (Bleeker, 1856). – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 291). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 3–91 m. Marine species.

Siphamia majimai Matsubara & Iwai, 1958. – Taxonomy: **New record** from New Caledonia, based on information by

G. R. Allen (personal communication, May 2010); previously reported as *Siphamia versicolor* (non Smith & Radcliffe in Radcliffe, 1911) by Plessis & Fourmanoir (1966c: 129), and as *Siphamia* sp. by Rivaton et al. (1990: 24) and Kulbicki & Williams (1997: 15). IRDNC and SMNS material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], 12, 14. Depth: 0–91 m. Marine species. – Remarks: Two additional, undescribed *Siphamia* spp. occur in New Caledonia, which will be described in a review of the genus by Gon & Allen (G. R. Allen, personal communication, May 2010).

Sphaeramia nematoptera (Bleeker, 1856). – Taxonomy: First record from New Caledonia (Grande Terre) by Allen (1999b: 2610). IRDNC and SMNS material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 1–14 m. Marine species.

Sphaeramia orbicularis (Cuvier [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1828) – Apogon à pois. – Taxonomy: First record from New Caledonia (Grande Terre) as *Apogon orbicularis* by Whitley (1961: 64). AMS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–5 m. Marine species.

Zoramia leptacantha (Bleeker, 1856–1857) – Apogon à dorsale filamenteuse. – Taxonomy: First record from New Caledonia by Whitley (1961: 65); previously described as *Apogon graeffei* by Fourmanoir (1981: 27). AMS, IRDNC and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10. Depth: 1–12 m. Marine species.

Zoramia viridiventer Greenfield, Langston & Randall, 2005. – Taxonomy: **New record** from New Caledonia; previously reported as *Apogon fragilis* (non Smith, 1961) by Fourmanoir (1981: 27), as *Apogon gilberti* (non Jordan & Seale, 1905) by Rivaton et al. (1990: 23) and Thollot (1996a: 10), and as *Apogon* sp. 1 by Laboute & Grandperrin (2000: 215). SMNS material. – Distribution: NC: 5, [6], [7], 8, [9], 10, 14. Depth: 1–15 m. Marine species.

Epigonidae

Brephostoma carpenteri Alcock, 1899. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 24) and Rivaton & Bourret (1999: 318). – Distribution: NC: 4, [5], [7]. Depth: 500–2782 m. Marine species.

Sillaginidae

Sillago ciliata Cuvier in Cuvier & Valenciennes, 1829 – Baleinier, merlan; Ièh (Canala). – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 34); previously reported as *Sillago* sp. by Jouan (1861: 272–273) and described as *Sillago insularis* by Castelnau (1873: 114). IRDNC and WAM material. – Distribution: NC: [1], [5], [6], [7], 8, [9], 10, 11, [12]; AU: 17. Depth: 5–46 m. Marine species.

Sillago sihama (Forsskål in Niebuhr, 1775) – Baleinier argenté. – Taxonomy: First record from New Caledonia (Grande Terre) by Borodin (1932: 85). IRDNC and WAM material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–1 m. Freshwater, transitional water and marine.

Malacanthidae

Branchiostegus wardi Whitley, 1932 – Tête de cheval. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 134). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 100–250 m. Marine species.

Hoplolatilus chlupatyi Klausewitz, McCosker, Randall & Zetzsche, 1978. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51), Rivaton & Bourret (1999: 78) and Fricke & Kulbicki (2006: 331). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 30–60 m. Marine species.

Hoplolatilus cuniculus Randall & Dooley, 1974. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51) and Laboute & Grandperrin (2000: 221). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 25–115 m. Marine species.

Hoplolatilus fronticinctus (Günther, 1887). – Taxonomy: First record from New Caledonia by Dooley (1978: 64–65). According to G. R. Allen (personal communication, May 2010), western Pacific material belongs to an undescribed species (to be described by Allen & Erdmann). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 40–70 m. Marine species.

Hoplolatilus starcki Randall & Dooley, 1974. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 51) and Kulbicki et al. (1994: 22). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 20–105 m. Marine species.

Malacanthus brevirostris Guichenot, 1848 – Couvreur à rostre court. – Taxonomy: First record from New Caledonia by Fourmanoir (1976: 54); previously reported as *Malacanthus hoedti* by Fourmanoir (1971b: 112). – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 5–50 m. Marine species.

Malacanthus latovittatus (Lacepède [ex Commerson], 1801) – Malacanthe à larges raies, oeil de la mer. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 135). – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], 14. Depth: 5–60 m. Marine species.

Coryphaenidae

Coryphaena equiselis Linnaeus, 1758 – Coryphène dauphin. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 36) and Rivaton & Bourret (1999: 320). – Distribution: NC: [1], [2], [3], 4, [5], [6], [7], [8], [9], [10], [11], [12], [13], [14], [15], [16]; AU: 17, [18]. Depth: 0–400 m. Marine species.

Coryphaena hippurus Linnaeus, 1758 – Coryphène, mahimahi. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 326). – Distribution: NC: 1, [2], [3], [4], 5, 6, 7, 8, 9, 10, 11, 12, [13], [14], [15], 16. Depth: 0–100 m. Marine species.

Echeneidae

Echeneis naucrates Linnaeus, 1758 – Rémora. – Taxonomy: First record from New Caledonia by Jouan (1879: 334). – Distribution: NC: 1, [2], [3], [4], 5, 6, 7, 8, 9, 10, 11, [12], [13], 14, [15], [16]; AU: 17, 18; NZ: [19], 20, [21], [22], 23. Depth: 0–85 m. Marine species.

Phtheirichthys lineatus (Menzies, 1791). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 37) and Fricke & Kulbicki (2006: 332). – Distribution: NC: [1], [5], [6], [7], 8, [9], [10], [11], [12]; AU: [17], [18]; NZ: 23. Depth: 0–5 m. Marine species.

Remora osteochir (Cuvier, 1829). – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 115); also reported as *Echeneis sex-decimlamellata* by Fourmanoir (1971b: 115). – Distribution: NC: [1], [3], [4], [5], [6], [7], 8, [9], [10], [14]. Depth: 0–200 m. Marine species.

Remora remora (Linnaeus, 1758). – Taxonomy: **New record** from New Caledonia, based on underwater video taken at the Île des Pins, seen in the internet on 19 Mar. 2009 (Anonymous 2009b). – Distribution: NC: [1], [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], 12, [13], [14], [15], [16]; AU: 17, 18; NZ: [19], 20, [22], 23, 24, 25, 26. Depth: 0–200 m. Transitional water and marine.

Remorina albescens (Temminck & Schlegel, 1850). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 37) and Fricke & Kulbicki (2006: 332). Record verified by underwater videos taken at the Île des Pins and at Ouvéa (Loyalty Islands) (Anonymous 2009b, 2009c). – Distribution: NC: [1], [3], [4], [5], [6], [7], 8, [9], [10], [11], 12, 14. Depth: 0–200 m. Marine species.

Carangidae

Alectis ciliaris (Bloch, 1787) – Carangue à filaments. – Taxonomy: First record from New Caledonia by Smith-Vaniz (1999: 2684); previously reported as *Alectis indicus* (non Rüppell, 1830) by Fourmanoir & Laboute (1976: 172). – Distribution: NC: [1], 5, [6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–100 m. Marine species.

Alepes apercna Smith-Vaniz in Grant, 1987. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 332); previously reported as *Alepes kalla* (non Cuvier in Cuvier & Valenciennes, 1833) by Fourmanoir & Laboute (1976: 176) and as *Alepes djedaba* (non Forsskål in Niebuhr, 1775) by Rivaton et al. (1990: 31). – Distribution: NC: [5], 6, [7], 8, [9], [10]. Depth: 5–80 m. Marine species.

Alepes vari (Cuvier in Cuvier & Valenciennes, 1833) – Sélar harengule. – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 31) and Thollot (1996a: 10). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], 10. Depth: 0–10 m. Transitional water and marine.

Atule mate (Cuvier in Cuvier & Valenciennes, 1833) – Carangue maté, seichard. – Taxonomy: First record from New Caledonia as *Selar mate* by Whitley (1961: 65). AMS and IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], 10. Depth: 1–80 m. Transitional water and marine.

Carangoides chrysophrys (Cuvier in Cuvier & Valenciennes, 1833) – Carangue à sourcils d'or, carangue à museau pointu. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 172). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 14. Depth: 0–60 m. Transitional water and marine.

Carangoides coeruleopinnatus (Rüppell, 1830) – Carangue grise à points jaunes. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 176); subsequently reported as *Carangoides uii* by Wantiez (1993: 440). – Distribution: NC: 5, [6], 7, 8, [9], [10]. Depth: 1–60 m. Marine species.

Carangoides dinema Bleeker, 1851. – Taxonomy: First record from New Caledonia by Randall (2005a: 223). – Distribution: NC: [5], [6], 7, 8, [9], [10]. Depth: 1–22 m. Transitional water and marine.

Carangoides ferdau (Forsskål in Niebuhr, 1775) – Carangue à museau court. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 31) and Kulbicki et al. (1993: 28); previously reported as *Carangoides gilberti* by Fourmanoir & Laboute (1976: 174). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: [17], 18. Depth: 1–60 m. Marine species.

Carangoides fulvoguttatus (Forsskål in Niebuhr, 1775) – Carangue à tâches fauves, carangue à gouttes d'or, carangue à bandes. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 173); also reported as *Carangoides emburyi* by Fourmanoir & Laboute (1976: 173). – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 14. Depth: 1–100 m. Marine species.

Carangoides gymnostethus (Cuvier in Cuvier & Valenciennes, 1833) – Carangue à poitrine nue. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 174). – Distribution: NC: 1, 5, [6], 7, 8, [9], [10]. Depth: 10–100 m. Marine species.

Carangoides hedlandensis (Whitley, 1934) – Carangue à longes nageoires. – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 31) and Wantiez et al. (1996: 807); previously reported as *Caranx armatus* (non Rüppell, 1830) by Fourmanoir (1971b: 113). IRDNC material. – Distribution: NC: [5], 6, 7, 8, [9], [10]. Depth: 0–40 m. Transitional water and marine.

Carangoides malabaricus (Bloch & Schneider, 1801) – Carangue monique. – Taxonomy: First record from New Caledonia by Borodin (1932: 77); previously reported as *Trachinotus rhomboides* (non Bloch, 1787) by Jouan (1879: 334). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–140 m. Marine species.

Carangoides orthogrammus Jordan & Gilbert, 1882 – Carangue à points jaunes. – Taxonomy: First record from New Caledonia (Grande Terre) by Fourmanoir & Laboute (1976: 174–175). – Distribution: NC: 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17, 18. Depth: 3–168 m. Marine species.

Carangoides plagiotaenia Bleeker, 1857. – Taxonomy: First record from New Caledonia by Myers (1999: 138). – Distribution: NC: [5], [6], [7], 8, [9], 10, 14. Depth: 2–200 m. Marine species.

Caranx ignobilis (Forsskål in Niebuhr, 1775) – Carangue à grosse tête. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 177). – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17. Depth: 0–188 m. Transitional water and marine.

Caranx lugubris Poey, 1860 – Carangue noire. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 177). – Distribution: NC: 1, 5, 6, [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 5–354 m. Marine species.

Caranx melampygus Cuvier in Cuvier & Valenciennes, 1833 – Carangue bleue, carangue étoilée, carangue à anale noire. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 178). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: [17], 18. Depth: 0–190 m. Marine species.

Caranx papuensis Alleyne & Macleay, 1877 – Carangue à points noirs. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 31) and Kulbicki & Wantiez (1990: 125); previously reported as *Caranx celetus* by Fourmanoir & Laboute (1976: 176). IRDNC material. – Distribu-

tion: NC: 5, 6, 7, 8, [9], 10, 14. Depth: 0–40 m. Freshwater, transitional water and marine.

Caranx sexfasciatus Quoy & Gaimard, 1825 – Carangue vorace. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 179); previously reported as *Caranx hippos* (non Linné, 1766) by Plessis & Fourmanoir (1966c: 129). IRDNC material. – Distribution: NC: [1], 5, 6, [7], 8, [9], [10], [11], [12], 14; AU: [17], 18. Depth: 0–146 m. Freshwater, transitional water and marine.

Caranx tille Cuvier in Cuvier & Valenciennes, 1833 – Carangue tille. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 31) and Fricke & Kulbicki (2006: 332); one specimen collected by hook and line in northeastern Grande Terre (40 m depth) by M. Kulbicki in 1996. – Distribution: NC: [5], 6, 7, 8, [9], [10]. Depth: 20–120 m. Marine species.

Decapterus macarellus (Cuvier in Cuvier & Valenciennes, 1833) – Comète maquereau. – Taxonomy: First record from New Caledonia by Smith-Vaniz (1999: 2719); subsequently reported as *Decapterus* sp. by Laboute & Grandperrin (2000: 232). – Distribution: NC: [5], 6, 7, 8, [9], [10]. Depth: 0–40 m. Marine species.

Decapterus macrosoma Bleeker, 1851 – Chinchard. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 31). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 20–214 m. Marine species.

Decapterus muroadsi (Temminck & Schlegel, 1844). – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 32, *D. maruadsi*, *D. muroadsi*), Rivaton & Bourret (1999: 32), and Fricke & Kulbicki (2006: 332). – Distribution: NC: [1], [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18; NZ: 20, 23. Depth: 1–320 m. Marine species.

Decapterus russelli (Rüppell, 1830) – Chinchard, maquereau. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 190); previously reported as *Decapterus lajang* by Fourmanoir (1971b: 113). AMS material. – Distribution: NC: 1, 4, 5, [6], [7], 8, [9], [10], 14. Depth: 40–275 m. Marine species.

Decapterus tabl Berry, 1968 – Comète quere rouge. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 32) and Kulbicki et al. (1994: 22). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 7–400 m. Marine species.

Elagatis bipinnulata (Quoy & Gaimard, 1825) – Coureur arc-en-ciel, saumon. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 179). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14, 16; AU: 17, 18; NZ: 20. Depth: 0–150 m. Marine species.

Gnathanodon speciosus (Forsskål in Niebuhr, 1775) – Carangue jaune, la belle carangue. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 181). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 0–80 m. Marine species.

Megalaspis cordyla (Linnaeus, 1758) – Carangue à bouclier. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 113, *Magalaspis cordyla*). – Distribution: NC: 5, [6], 7, 8, [9], 10. Depth: 0–100 m. Transitional water and marine.

Naucrates ductor (Linnaeus, 1758) – Poisson pilote. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 113); previously reported as *Gasterosteus* sp. by Jouan (1861: 291). IRDNC material. – Distribution: NC: 1, [2], [3], [4], 5, 6, 7, 8, 9, 10, 11, 12, [13], [14], [15], [16]; AU: [17], 18. Depth: 0–300 m. Marine species.

Pseudocaranx dentex (Bloch & Schneider, 1801) – Carangue à ligne jaune, carangue dentue. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 32) and Kulbicki & Wantiez (1990: 125); previously reported as *Carangoides georgianus* by Fourmanoir & Laboute (1976: 172). – Distribution: NC: 1, [5], 6, 7, 8, [9], [10], [11], 12; AU: [17], 18; NZ: 20, 21, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–238 m. Transitional water and marine.

Scomberoides commersonnianus Lacepède [ex Commerson], 1801 – Sauteur talang. – Taxonomy: First record from New Caledonia as *Scomberoides commersoni* by Kulbicki & Wantiez (1990: 125). – Distribution: NC: [5], 6, [7], 8, 9, 10. Depth: 0–50 m. Transitional water and marine.

Scomberoides lysan (Forsskål in Niebuhr, 1775) – Macquereau chevalier. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 191). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 14. Depth: 0–100 m. Transitional water and marine.

Scomberoides tol (Cuvier in Cuvier & Valenciennes, 1832) – Maquereau chevalier. – Taxonomy: First record from New Caledonia as *Chorinemus tol* by Fourmanoir (1971b: 113). IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], 10, 11, [12], 14. Depth: 0–50 m. Transitional water and marine.

Selar boops (Cuvier in Cuvier & Valenciennes, 1833) – Sélar oeil de boeuf. – Taxonomy: First record from New Caledonia by Smith-Vaniz (1999: 2735). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 5–500 m. Marine species.

Selar crumenophthalmus (Bloch, 1793) – Maquereau à gros yeux, carangue à grande paupière. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 191). – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 0–170 m. Marine species.

Seriola dumerili (Risso, 1810) – Carangue amoureuse, carangue ambrée, liche. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 180). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12], 14; AU: 17, 18. Depth: 1–360 m. Marine species.

Seriola lalandi Valenciennes in Cuvier & Valenciennes, 1833 – Sériole, saumon. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 32) and Kulbicki et al. (1994: 22); previously reported as *Seriola aureovittata* by Fourmanoir & Laboute (1976: 180). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18; NZ: 20, 21, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–400 m. Transitional water and marine.

Seriola rivoliana Valenciennes in Cuvier & Valenciennes, 1833 – Carangue amoureuse, carangue ombrée, liche. – Taxonomy: First record from New Caledonia by Kulbicki (1988b: 306). – Distribution: NC: 1, [5], 6, [7], 8, [9], [10], [11], 12, 14; AU: 17, 18; NZ: 20. Depth: 5–160 m. Marine species.

Trachinotus anak Ogilby, 1909. – Taxonomy: First record from New Caledonia by Smith-Vaniz (1999: 2744). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–3 m. Marine species.

Trachinotus baillonii (Lacepède [ex Commerson], 1801) – Trachinote à points noirs. – Taxonomy: First record

from New Caledonia by FOURMANOIR & LABOUTE (1976: 181). – Distribution: NC: [5], 6, 7, 8, [9], [10], [11], [12], 14; AU: 17, 18. Depth: 0–3 m. Marine species.

Trachinotus blochii (Lacepède [ex Commerson], 1801) – Trachinote de Bloch, pampre. – Taxonomy: First record from New Caledonia by WHITLEY (1961: 65). AMS and IRDNC material. – Distribution: NC: [1], [5], 6, 7, 8, 9, [10], [11], [12], 14; AU: [17], 18. Depth: 0–3 m. Marine species.

Trachinotus coppingeri Günther, 1884. – Taxonomy: **New record** from New Caledonia; previously reported as *Trachynotus russelei* (non Cuvier in Cuvier & Valenciennes, 1832) by BORODIN (1932: 77). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 0–3 m. Marine species.

Uraspis uraspis (Günther, 1860) – Carangue paia. – Taxonomy: First record from New Caledonia by FOURMANOIR (1971b: 113). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 20–130 m. Marine species.

Menidae

Mene maculata (Bloch & Schneider, 1801). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 52). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–200 m. Transitional water and marine.

Leiognathidae

Eubleekeria splendens (Cuvier, 1829) – Plat-plat à tâche noire. – Taxonomy: First record from New Caledonia (Grande Terre) as *Leiognathus splendens* by THOLLOT & KULBICKI (1988: 618). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 0–100 m. Transitional water and marine.

Gazza minuta (Bloch, 1795) – Cro-cro, sapsap dentu. – Taxonomy: First record from New Caledonia (Grande Terre) by FOURMANOIR & LABOUTE (1976: 304); previously reported as *Gazza equuliformis* by BORODIN (1932: 78). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], 10. Depth: 0–110 m. Transitional water and marine.

Leiognathus equulus (Forsskål in Niebuhr, 1775) – Plat-plat commun. – Taxonomy: First record from New Caledonia (Grande Terre) by FOURMANOIR & LABOUTE (1976: 304). IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], [10]. Depth: 0–70 m. Transitional water and marine.

Leiognathus fasciatus (Lacepède [ex Commerson], 1803) – Plat-plat rayé. – Taxonomy: First record from New Caledonia (Grande Terre) by PLESSIS & FOURMANOIR (1966c: 132). – Distribution: NC: 5, 6, 7, 8, [9], [10]. Depth: 0–50 m. Transitional water and marine.

Photopectoralis bindus (Valenciennes in Cuvier & Valenciennes, 1835) – Plat-plat. – Taxonomy: First record from New Caledonia (Grande Terre) as *Leiognathus bindus* by CONAND (1985: 464). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 0–160 m. Transitional water and marine.

Photoplagios leuciscus (Günther, 1860). – Taxonomy: First record from New Caledonia (Grande Terre) as *Leiognathus leuciscus* by RIVATON et al. (1990: 48) and KULBICKI & WANTIEZ (1990: 125, 129). IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], [10]. Depth: 0–70 m. Marine species.

Photoplagios lineolatus (Valenciennes in Cuvier & Valenciennes, 1835). – Taxonomy: First record from New Caledonia (Grande Terre) as *Leiognathus lineolatus* by RIVATON et al. (1990: 48) and RIVATON & RICHER DE FORGES (1990: 30). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–50 m. Marine species.

Photoplagios rivulatus (Temminck & Schlegel, 1845). – Taxonomy: First record from New Caledonia as *Leiognathus rivulatus* by THOLLOT & KULBICKI (1988: 618). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 0–20 m. Marine species.

Secutor insidiator (Bloch, 1787) – Sapsap boxeur. – Taxonomy: First record from New Caledonia (Grande Terre) by RIVATON et al. (1990: 48) and KULBICKI et al. (1993: 28). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–150 m. Transitional water and marine.

Secutor ruconius (Hamilton, 1822) – Sapsap bouledogue, Motambo bouledogue. – Taxonomy: First record from New Caledonia (Grande Terre) by THOLLOT & KULBICKI (1988: 618). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–40 m. Freshwater, transitional water and marine.

Bramidae

Brama dussumieri Cuvier in Cuvier & Valenciennes, 1831 – Castagnole mignonne. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 29) and LAST & MOTEKI (2001: 2831). – Distribution: NC: [1], [3], [4], [5], [6], [7], 8, [9], [10], [14], [16]. Depth: 1–300 m. Marine species.

Brama myersi Mead, 1972. – Taxonomy: First record from New Caledonia in original description by MEAD (1972: 76–81), and in LAST & MOTEKI (2001: 2833). – Distribution: NC: [1], [3], [4], [5], [6], [7], 8, [9], [10], [14], [16]; NZ: 20. Depth: 1–200 m. Marine species.

Brama orcini Cuvier in Cuvier & Valenciennes, 1831. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by RIVATON et al. (1990: 29) and KULBICKI et al. (1994: 22); previously reported as *Collybus drachme* by FOURMANOIR (1971b: 113, 116). – Distribution: NC: 1, [3], [4], [5], [6], [7], [8], [9], [10], [14], [16]. Depth: 1–1229 m. Marine species.

Eumegistus illustris Jordan & Jordan, 1922 – Brême noire. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 327). – Distribution: NC: [1], [2], [3], [4], [5], [6], [7], 8, [9], [10], [11], 12, 14, [16]. Depth: 1–520 m. Marine species.

Pteraclis aesticola (Jordan & Snyder, 1901). – Taxonomy: First record from New Caledonia by FRICKE & KULBICKI (2006: 333); previously reported as *Pteraclis velifera* (non Pallas, 1770) and as *Pteraclis carolinus* (non Valencienes in Cuvier & Valenciennes, 1833) by FOURMANOIR (1971b: 113, 116). – Distribution: NC: 1, [3], [4], [5], [6], [7], [8], [9], [10], [12], 14, [16]. Depth: 0–100 m. Marine species.

Pterycombus petersii (Hilgendorf, 1878). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 30), RIVATON & BOURRET (1999: 320), and FRICKE & KULBICKI (2006: 333). – Distribution: NC: 1, [2], [3], [4], [5], [6], [7], [8], [9], [10], [11], [12], [13], 14, [15], [16]; AU: [17], [18]; NZ: 19, [20], [21], [22], 23, [24], [25], [26], 27. Depth: 0–340 m. Marine species.

Taractes asper Lowe, 1843. – Taxonomy: First record from New Caledonia by FOURMANOIR (1971b: 110, 113, 116). – Distribution: NC: [1], [2], [3], [4], [5], [6], [7], [8], [9],

[10], [11], [12], [13], 14, [15], [16]; AU: [17], [18]; NZ: [19], [20], [21], [22], 23. Depth: 1–140 m. Marine species.

Taractes rubescens (Jordan & Evermann, 1887). – Taxonomy: First record from New Caledonia by Last & Moteki (2001: 2836). – Distribution: NC: [1], [5], [6], [7], 8, [9], [10], [14], [16]. Depth: 1–400 m. Marine species.

Taractichthys steindachneri (Döderlein in Steindachner & Döderlein, 1883) – Brême noire, brême à longues nageoires, castagnole de Madère. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 30) and Laboute & Grandperrin (2000: 474, 483); previously reported as *Taractes longipinnis* (non Lowe, 1843) by Fourmanoir (1971b (110, 113). – Distribution: NC: [1], [2], [5], [6], [7], 8, [9], [10], [11], [12], 14, [16]; AU: [17], [18]; NZ: [20], [21], 23, 24. Depth: 50–700 m. Marine species.

Emmelichthyidae

Emmelichthys nitidus Richardson, 1845. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 112). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12]; AU: [17], [18]; NZ: [21], [23], [24], [25], [26], 27, 28. Depth: 86–500 m. Marine species.

Erythrocles taeniatus Randall & Rivaton, 1992. – Taxonomy: First record from New Caledonia by Carpenter (2001a: 2839); previously reported as *Emmelichthys schlegeli* (non Richardson, 1846) by Fourmanoir (1971b: 112). IRDNC material. – Distribution: NC: 4, [5], [6], [7], 8, [9], 10, 14. Depth: 210–400 m. Marine species.

Lutjanidae

Aphareus furca (Lacepède [ex Commerson], 1801) – Aphareus bleuatre, vivaneau à queue fourchue, lantanier noir. – Taxonomy: First record from New Caledonia as *Aphareus furcatus* by Fourmanoir & Laboute (1976: 83). USNM material. – Distribution: NC: 1, [5], 6, 7, 8, [9], [10], 14. Depth: 1–122 m. Marine species.

Aphareus rutilans Cuvier in Cuvier & Valenciennes, 1830 – Lantanier rouge. – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 49) and Kulbicki et al. (1993: 28). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 50–350 m. Marine species.

Aprion virescens Valenciennes in Cuvier & Valenciennes, 1830 – Aprion verdâtre, mekua, bar. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 83). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–180 m. Marine species.

Etelis carbunculus Cuvier in Cuvier & Valenciennes, 1828 – Vivaneau rouge, sacré chien rouge. – Taxonomy: First record from New Caledonia by Fourmanoir (1971a: 134–135). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], 10, [11], [12], 14; AU: [17], [18]; NZ: 21, 23. Depth: 90–350 m. Marine species.

Etelis coruscans Valenciennes, 1862 – Vivaneau la flamme, barbier les gros yeux. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 49) and Kulbicki et al. (1994: 23); previously described as *Etelis oculatus* var. *lifuensis* by Fourmanoir (1971a: 134–135), and reported as *Etelis oculatus* (non Valenciennes in Cuvier & Valenciennes, 1828) by Fourmanoir (1971b: 112). Two forms are known of this species, a short-tailed and a long-tailed form (Anderson & Allen 2001: 2858). Both forms are found in New Caledonia, where the short-tailed form is generally restricted to seamounts while the long-tailed form, although found on seamounts, occurs more commonly on island slopes. IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12], 14; AU: 17; NZ: 20. Depth: 90–400 m. Marine species.

Etelis radiosus Anderson, 1981 – Vivaneau à forte machoire. – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 49) and Séret et al. (1997: 104). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 90–360 m. Marine species.

Lipocheilus carnolabrum (Chan, 1970) – Vivaneau verrue, vivaneau grosse lèvre. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 70). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 90–340 m. Marine pecies.

Lutjanus adetii (Castelnau, 1873) – Rouget de nuit. – Taxonomy: First record from New Caledonia as *Diacope adetii* by Castelnau (1873: 111); subsequently described as *Lutjanus paravitta* by Postel (1965b: 244–247), and reported as *Lutjanus amabilis* by Fourmanoir & Laboute (1976: 74). – Distribution: NC: 1, 5, [6], [7], 8, [9], 10, [11], 12; AU: 17. Depth: 1–20 m. Marine species.

Lutjanus argentimaculatus (Forsskål in Niebuhr, 1775) – Rouget, vieille de palétuvier. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 74). IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], 10, 11, [12], 14. Depth: 0–100 m. Freshwater, transitional water and marine.

Lutjanus bohar (Forsskål in Niebuhr, 1775) – Lutjan rouge, anglais. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 37, 75). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–100 m. Marine species.

Lutjanus erythropterus Bloch, 1790 – Vivaneau cramoisi. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 49). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 5–100 m. Marine species.

Lutjanus fulviflamma (Forsskål in Niebuhr, 1775) – Dorade à tâche noire. – Taxonomy: First record from New Caledonia by Borodin (1932: 82). AMS, IRDNC and USNM material. – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–35 m. Freshwater, transitional water and marine.

Lutjanus fulvus (Schneider [ex Forster] in Bloch & Schneider, 1801) – Lutjan fauve. – Taxonomy: First record from New Caledonia by Borodin (1932: 82). IRDNC and USNM material. – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: [17], 18. Depth: 0–75 m. Freshwater, transitional water and marine.

Lutjanus fuscescens (Valenciennes in Cuvier & Valenciennes, 1830) – Vivaneau d'eau douce. – Taxonomy: First record from New Caledonia by Marquet et al. (1997: 29). – Distribution: NC: [5], 6, [7], 8, 9, 10. Depth: 0–15 m. Freshwater, transitional water and marine.

Lutjanus gibbus (Forsskål in Niebuhr, 1775) – Queue en pagaie, lutjan bossu. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 76). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], 12, 14. Depth: 0–100 m. Marine species.

Lutjanus kasmira (Forsskål in Niebuhr, 1775) – Lutjan à raies bleues. – Taxonomy: First record from New Caledonia

by Loubens (1978: 266). – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, 12, 14; AU: 17, 18; NZ: 20. Depth: 0–100 m. Marine species.

Lutjanus lutjanus Bloch, 1790 – Lutjan à lignes jaunes. – Taxonomy: First record from New Caledonia by Allen (1987a: 41); previously reported as *Lutjanus lineolatus* by Fourmanoir & Laboute (1976: 76). – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 0–96 m. Marine species.

Lutjanus malabaricus (Bloch & Schneider, 1801) – Perche écarlate. – Taxonomy: First record from New Caledonia (Grande Terre) by Fourmanoir & Laboute (1976: 77). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–100 m. Marine species.

Lutjanus monostigma (Cuvier in Cuvier & Valenciennes, 1828) – Lutjan tâcheté. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 40) and Letourneur et al. (1998: 43). – Distribution: NC: 5, 6, 7, 8, [9], 10, 14. Depth: 1–60 m. Marine species.

Lutjanus quinquelineatus (Bloch, 1790) – Perche à raies bleues, jaunet. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 77). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14; AU: 17. Depth: 0–40 m. Marine species.

Lutjanus rivulatus (Cuvier in Cuvier & Valenciennes, 1828) – Lutjan maori. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 49) and Kulbicki & Williams (1997: 15). – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 0–100 m. Freshwater, transitional water and marine.

Lutjanus rufolineatus (Valenciennes in Cuvier & Valenciennes, 1830) – Jaunet. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 334); previously reported as *Diacope* sp. by Jouan (1861: 273–274, 274–275), and as *Lutjanus boutton* (non Lacepède, 1802) by Kulbicki & Mou-Tham (1987: 17). – Distribution: NC: [5], [6], [7], [8], 9, [10]. Depth: 2–50 m. Marine species.

Lutjanus russellii (Bleeker, 1849) – Hublot. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 78). IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], 10, 14. Depth: 0–80 m. Freshwater, transitional water and marine.

Lutjanus sebae (Cuvier, 1816) – Pouatte, empereur rouge. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 78). – Distribution: NC: 1, 5, 6, 7, 8, [9], [10]. Depth: 2–180 m. Freshwater, transitional water and marine.

Lutjanus semicinctus Quoy & Gaimard, 1824 – Lutjan à bandes noires. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 77). – Distribution: NC: [5], 6, 7, 8, [9], [10]. Depth: 10–36 m. Marine species.

Lutjanus vitta (Quoy & Gaimard, 1824) – Jaunet. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 80); previously reported as *Diacope* sp. by Jouan (1861: 276–277). FRSKU, IRDNC, URB and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 14. Depth: 10–72 m. Marine species.

Macolor macularis Fowler, 1931. – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 50) and Myers (1999: 147). – Distribution: NC: 5, 6, 7, 8, 9, [10], 14. Depth: 3–90 m. Marine species.

Macolor niger (Forsskål in Niebuhr, 1775) – Perche blanche et noire. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 80). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 1–90 m. Marine species.

Paracaesio caerulea (Katayama, 1934). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 50) and Kulbicki et al. (1994: 23). – Distribution: NC: 1, [5], [7]. Depth: 100–355 m. Marine species.

Paracaesio kusakarii Abe, 1960 – Vivanette sellée. – Taxonomy: First record from New Caledonia (Grande Terre) by Fourmanoir & Rivaton (1979: 430–431). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 100–310 m. Marine species.

Paracaesio sordida Abe & Shinohara, 1962. – Taxonomy: First record from New Caledonia (Grande Terre) by Raj & Seeto (1983: 453). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 5–200 m. Marine species.

Paracaesio xanthura (Bleeker, 1869) – Oeil du large. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 194). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12], 14; AU: 17, 18; NZ: 20. Depth: 5–250 m. Marine species.

Parapristipomoides squamimaxillaris (Kami, 1973) – Colas écailleuse. – Taxonomy: First record from New Caledonia by Fourmanoir (1982b: 92–93). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 130–460 m. Marine species.

Pristipomoides argyrogrammicus (Valenciennes in Cuvier & Valenciennes, 1832) – Cerf-volant, vivaneau à réseau d'argent, cancrelat. – Taxonomy: First record from New Caledonia as *Tropidinius aryrogrammicus* by Fourmanoir & Laboute (1976: 84). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 70–350 m. Marine species.

Pristipomoides auricilla (Jordan, Evermann & Tanaka, 1927) – Vivaneau à tâches jaunes. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 82). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 90–360 m. Marine species.

Pristipomoides filamentosus (Valenciennes in Cuvier & Valenciennes, 1830) – Vivaneau blanc, vivaneau rose. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 112). – Distribution: NC: 1, [5], [6], [7], 8, [9], 10, [11], 12, 14; AU: 17. Depth: 40–400 m. Marine species.

Pristipomoides flavipinnis Shinohara, 1963 – Vivaneau jaune. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 81). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 90–360 m. Marine species.

Pristipomoides multidens (Day, 1871) – Vivaneau à grosse-écaille, poulet. – Taxonomy: First record from New Caledonia by Fourmanoir (1976: 71); subsequently reported as *Pristipomoides typus* (non Bleeker, 1852) by Rivaton et al. (1990: 50) and Laboute & Grandperrin (2000: 490). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], 12, 14. Depth: 40–245 m. Marine species.

Pristipomoides sieboldii (Bleeker, 1854) – Colas lavande. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 50) and Kulbicki et al. (1994: 23). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 100–360 m. Marine species.

Pristipomoides zonatus (Valenciennes in Cuvier & Valenciennes, 1830) – Vivaneau rayé, jaunet du large. – Taxonomy: First record from New Caledonia as *Tropidinius zonatus* by Fourmanoir & Laboute (1976: 82). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 70–350 m. Marine species.

Randallichthys filamentosus (Fourmanoir, 1970) – Vivaneau de Randall. – Taxonomy: Originally described from New Caledonia as *Etelis filamentosus* by Fourmanoir (1970a: 28–29). MNHN material (holotype). – Distribution: NC: 4, [5], [7]. Depth: 150–380 m. Marine species.

Symphorichthys spilurus (Günther, 1874) – Vivaneau voilier. – Taxonomy: First record from New Caledonia (Grande Terre) by Myers (1999: 144). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 5–60 m. Marine species.

Symphorus nematophorus (Bleeker, 1860) – Barbillon, lutjan à filament. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 37, 81). USNM material. – Distribution: NC: 5, 6, 7, 8, [9], [10], 11. Depth: 5–100 m. Marine species.

Caesionidae

Caesio caerulaurea Lacepède [ex Commerson], 1801 – Fusilier à bande dorée. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 30) and Kulbicki et al. (1993: 28). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 14. Depth: 0–50 m. Marine species.

Caesio cuning (Bloch, 1791) – Caesio à ventre rouge. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 30) and Kulbicki & Wantiez (1990: 125); previously reported as *Caesio erythrogaster* by Fourmanoir & Laboute (1976: 192). IRDNC and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 14. Depth: 0–60 m. Marine species.

Caesio lunaris Ehrenberg & Cuvier in Cuvier & Valenciennes, 1830 – Caesio croissant. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 30) and Evans (2006: 96). – Distribution: NC: [5], 6, 7, 8, 9, [10], 14. Depth: 0–50 m. Marine species.

Caesio teres Seale, 1906 – Caesio jaune et bleu. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 16); previously reported as *Caesio pulcherrimus* by Fourmanoir & Laboute (1976: 192), and as *Caesio xanthonota* (non Bleeker, 1853) by Rivaton et al. (1990: 30). USNM material. – Distribution: NC: 5, [6], 7, 8, [9], [10], 14. Depth: 2–50 m. Marine species.

Dipterygonotus balteatus (Valenciennes in Cuvier & Valenciennes, 1830). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 257). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 37–91 m. Marine species.

Gymnocaesio gymnoptera (Bleeker, 1856) – Fusilier élégant. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 16). IRDNC and USNM material. – Distribution: NC: [5], [7], 14. Depth: 0–150 m. Marine species.

Pterocaesio chrysozona (Cuvier [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1830) – Caesio ceinture d'or. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 16). IRDNC and USNM material. – Distribution: NC: [5], [7], 14. Depth: 0–50 m. Marine species.

Pterocaesio digramma (Bleeker, 1864) – Fusilier à deux bandes jaunes. – Taxonomy: First record from New Caledonia as *Caesio digramma* by Fourmanoir & Laboute (1976: 191). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17, 18. Depth: 0–50 m. Marine species.

Pterocaesio marri Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953 – Fusilier de Marr. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 23); subsequently reported as *Pterocaesio* sp. 1 by Laboute & Grandperrin (2000: 259). IRDNC material. – Distribution: NC: 1, [5], 6, 7, 8, 9, 10, 14. Depth: 0–50 m. Marine species.

Pterocaesio pisang (Bleeker, 1853) – Caesio rose. – Taxonomy: First record from New Caledonia as *Caesio pisang* by Fourmanoir & Laboute (1976: 192). – Distribution: NC: 1, [5], 6, 7, 8, [9], [10], 14. Depth: 20–100 m. Marine species.

Pterocaesio tessellata Carpenter, 1987. – Taxonomy: First record from New Caledonia by Evans (2006: 97) and Fricke & Kulbicki (2006: 334). USNM material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 0–18 m. Marine species.

Pterocaesio tile (Cuvier in Cuvier & Valenciennes, 1830) – Fusilier à ligne olive, maquereau à dos bleu. – Taxonomy: First record from New Caledonia as *Caesio tile* by Fourmanoir (1971b: 112). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 0–60 m. Marine species.

Pterocaesio trilineata Carpenter, 1987 – Fusilier à trois bandes. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 30) and Kulbicki et al. (1993: 28). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], [11], [12], 14; AU: [17], 18. Depth: 0–50 m. Marine species.

Lobotidae

Lobotes surinamensis (Bloch, 1790) – Croupia roche. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 49) and Laboute & Grandperrin (2000: 483). – Distribution: NC: [1], [3], [4], [5], [6], [7], 8, [9], [10], 14, [16]. Depth: 0–70 m. Freshwater, transitional water and marine.

Gerreidae

Gerres filamentosus Cuvier [ex Russell], 1829 – Blanc à long filament. – Taxonomy: First record from New Caledonia by Thollot & Kulbicki (1988: 618). IRDNC material. – Distribution: NC: [5], 6, 7, 8, [9], [10]. Depth: 0–50 m. Freshwater, transitional water and marine.

Gerres longirostris (Lacepède, 1801) – Blanc-sabre. – Taxonomy: First record from New Caledonia by Iwatsuki et al. (2001: 955–961); previously reported as *Gerres acinaces* by Fourmanoir & Laboute (1976: 304). IRDNC and MUFS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–50 m. Freshwater, transitional water and marine.

Gerres oblongus Cuvier in Cuvier & Valenciennes, 1830 – Gros blanc, blanc élégant. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 304); previously reported as *Gerres macrosoma* by Rivaton et al. (1990: 39) and Thollot (1996a: 11). IRDNC and USNM material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 0–50 m. Freshwater, transitional water and marine.

Gerres oyena (Forsskål in Niebuhr, 1775) – Blanche gouvernail, blanche commune. – Taxonomy: First record from New Caledonia by Whitley (1961: 64); subsequently reported as *Gerres argyreus* by Woodland (2001 2591). AMS and MUFS material. – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 0–20 m. Freshwater, transitional water and marine.

Gerres subfasciatus Cuvier in Cuvier & Valenciennes, 1830 – Blanc argenté. – Taxonomy: First record from New Caledonia as *Gerres ovatus* by Borodin (1932: 84), and as *Gerres ovulatus* by Letourneur et al. (1998: 43). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–40 m. Freshwater, transitional water and marine.

Haemulidae

Diagramma picta (Thunberg, 1792) – Loche casteix, diagramme peint. – Taxonomy: First record from New Caledonia as *Plectorhynchus pictus* by Fourmanoir (1981: 25); previously reported as *Diagramma punctatum* (non Cuvier [ex Ehrenberg] in Cuvier & Valencienes, 1830) by Borodin (1932: 83). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14. Depth: 1–50 m. Transitional water and marine.

Plectorhinchus albovittatus (Rüppell, 1835) – Loche casteix, lèvre en caoutchouc. – Taxonomy: First record from New Caledonia by Tholiot (1996a: 11); previously reported as *Plectorhynchus harrawayi* by Fourmanoir & Laboute (1976: 101). – Distribution: NC: [1], 5, 6, 7, 8, [9], [10], 14. Depth: 2–50 m. Marine species.

Plectorhinchus chaetodonoides Lacepède, 1801 – Diagramme arlequin. – Taxonomy: First record from New Caledonia as *Plectorhynchus chaetodonoides* by Fourmanoir & Laboute (1976: 100). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 1–30 m. Transitional water and marine.

Plectorhinchus chrysotaenia (Bleeker, 1855). – Taxonomy: First record from New Caledonia by Randall et al. (1997: 191). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–25 m. Marine species.

Plectorhinchus flavomaculatus (Cuvier [ex Ehrenberg] in Cuvier & Valenciennes, 1830) – Grosse lèvre à tâches oranges. – Taxonomy: First record from New Caledonia as *Plectorhynchus flavomaculatus* by Fourmanoir & Laboute (1976: 100); previously reported as *Plectorhinchus roughleyi* by Whitley (1961: 65). AMS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 2–40 m. Marine species.

Plectorhinchus gibbosus (Lacepède, 1802) – Diagramma noire, casteix. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 43) and Kulbicki et al. (1993: 28). IRDNC material. – Distribution: NC: [1], 5, 6, 7, 8, [9], [10], [11], [12]; AU: [17], 18. Depth: 0–20 m. Freshwater, transitional water and marine.

Plectorhinchus lessonii (Cuvier in Cuvier & Valenciennes, 1830). – Taxonomy: First record from New Caledonia by Myers (1999: 150–151); previously listed as *Plectorhinchus diagrammus* (non Linnaeus, 1758) by Rivaton et al. (1990: 43). IRDNC material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–30 m. Marine species.

Plectorhinchus lineatus (Linnaeus, 1758) – Diagramme à bandes diagonales. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 50–51); previously reported as *Plectorhynchus goldmanni* by Fourmanoir & Laboute (1976: 100), and as *Plectorhinchus lineolatus* by Tholiot (1996a: 11). – Distribution: NC: 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 1–35 m. Marine species.

Plectorhinchus obscurus (Günther, 1872) – Loche casteix, lèvre en caoutchouc. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 43) and Kulbicki et al. (1993: 28). Taxonomic decision of Randall (2005a: 266). – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 2–50 m. Marine species.

Plectorhinchus picus (Cuvier in Guérin-Méneville, 1828) – Loche casteix, diagramme tâcheté. – Taxonomy: First record from New Caledonia as *Plectorhynchus picus* by Fourmanoir & Laboute (1976: 101). – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, 12, 14; AU: 17. Depth: 1–50 m. Marine species.

Plectorhinchus vittatus (Linnaeus, 1758) – Diagramme à bandes horizontales. – Taxonomy: First record from New Caledonia by Myers (1999: 151); previously reported as *Plectorhynchus orientalis* by Fourmanoir & Laboute (1976: 102). – Distribution: NC: 5, 6, 7, 8, 9, [10]. Depth: 2–25 m. Marine species.

Pomadasys argenteus (Forsskål in Niebuhr, 1775) – Perche argentée, crocro. – Taxonomy: First record from New Caledonia by Tholiot & Kulbicki (1988: 614, 618); previously reported as *Pristipoma operculare* (non Playfair in Playfair & Günther, 1867) by Borodin (1932: 83), and as *Pomadasys hasta* by Fourmanoir & Laboute (1976: 103). IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], [10]. Depth: 0–115 m. Freshwater, transitional water and marine.

Nemipteridae

Nemipterus balinensoides (Popta, 1918). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 57), Rivaton & Richer de Forges (1990: 30) and Wantiez et al. (1996: 807); previously reported as *Synagris striatus* (non Bloch in Cuvier & Valenciennes, 1830) by Borodin (1932: 84). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 30–80 m. Marine species.

Nemipterus furcosus (Valenciennes in Cuvier & Valenciennes, 1830). – Taxonomy: First record from New Caledonia by Myers (1999: 157); subsequently reported as *Nemipterus peronii* (non Valenciennes in Cuvier & Valenciennes, 1830) by Laboute & Grandperrin (2000: 274, 275). Record of the species from New Caledonia needs additional verification. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 8–110 m. Marine species.

Nemipterus peronii (Valenciennes in Cuvier & Valenciennes, 1830) – Rouget de jour. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 96); previously reported as *Synagris tolu* by Borodin (1932: 84). Record of the species from New Caledonia needs additional verification. – Distribution: NC: 5, 6, 7, 8, [9], [10]. Depth: 10–100 m. Marine species.

Nemipterus zysron (Bleeker, 1857) – Cohana élégante. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 57) and Letourneur et al. (1998: 43); previously reported as *Nemipterus metopias* by Fourmanoir (1981: 26). – Distribution: NC: 5, [6], 7, 8, [9], 10. Depth: 10–125 m. Marine species.

Parascolopsis inermis (Temminck & Schlegel, 1843). – Taxonomy: First record from New Caledonia by Rivaton et

al. (1990: 57). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 60–131 m. Marine species.

Parascolopsis tosensis (Kamohara, 1938). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 57). – Distribution: NC: 1, [5], [7]. Depth: 150–300 m. Marine species.

Pentapodus aureofasciatus Russell, 2001 – Pentapode à deux lignes d'or, Pentapode à bande jaune. – Taxonomy: First record from New Caledonia in original description by Russell (2001); previously reported as *Pentapodus microdon* (non Bleeker, 1853) and *P. nagasakiensis* (non Tanaka, 1915) by Fourmanoir & Laboute (1976: 96), as *Pentapodus* sp. by Kulbicki et al. (1994: 24), as *Pentapodus* sp. A by Myers (1999: 157), and as *Pentapodus* sp. 1 by Laboute & Grandperrin (2000: 276). AMS and BPBM material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 2–25 m. Marine species.

Pentapodus caninus (Cuvier in Cuvier & Valenciennes, 1830). – Taxonomy: First record from New Caledonia by Myers (1999: 157); previously reported as *Pentapodus macrurus* by Fourmanoir (1981: 26), and subsequently as *Pentapodus* sp. 2 by Laboute & Grandperrin (2000: 276). – Distribution: NC: 5, [6], [7], 8, [9], 10. Depth: 3–30 m. Marine species.

Pentapodus paradiseus (Günther, 1859). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 276). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 2–30 m. Marine species.

Scolopsis affinis Peters, 1877. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 24); previously reported as *Scolopsis personatus* (non Cuvier in Cuvier & Valenciennes, 1830) by Fourmanoir (1971b: 112). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 2–60 m. Marine species.

Scolopsis bilineata (Bloch, 1793) – Scolopsis à deux lignes. – Taxonomy: First record from New Caledonia by Borodin (1932: 82); subsequently reported as *Scolopsis cancellatus* (non Cuvier in Cuvier & Valenciennes, 1830) by Whitley (1961: 65). AMS, IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–25 m. Marine species.

Scolopsis ciliata (Lacepède, 1802) – Scolopsis à tâches oranges. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 98). – Distribution: NC: 5, [6], [7], 8, [9], 10. Depth: 0–25 m. Transitional water and marine.

Scolopsis lineata Quoy & Gaimard, 1824 – Scolopsis à carrés noirs. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 57) and Laboute & Grandperrin (2000: 277). – Distribution: NC: [5], 6, 7, 8, [9], 10, 11, [12], 14. Depth: 2–20 m. Marine species.

Scolopsis taenioptera (Cuvier [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1830). – Taxonomy: First record from New Caledonia by Béarez (2003: 61–62). DASMN and MNHN material. – Distribution: NC: 5, [6], [7], 8, [9], 10. Depth: 3–50 m. Marine species.

Scolopsis temporalis (Cuvier in Cuvier & Valenciennes, 1830) – Scolopsis à tempe nue. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 98); subsequently reported as *Scolopsis monogramma* by Randall et al. (1997: 207). IRDNC material. This species may have been confused with *Scolopsis taenioptera*. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 2–30 m. Marine species.

Scolopsis trilineata Kner, 1868 – Scolopsis à trois lignes. – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS and SMNS material. – Distribution: NC: 5, 6, 7, 8, [9], 10, 11, [12], 14. Depth: 0–20 m. Marine species.

Lethrinidae

Gnathodentex aureolineatus (Lacepède [ex Commerson], 1802) – Perche à lignes d'or. – Taxonomy: First record from New Caledonia as *Gnathodentex aurolineatus* by Kulbicki (1988a: 90). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: [17], 18. Depth: 1–30 m. Marine species.

Gymnocranius audleyi Ogilby, 1916. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 24). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]. Depth: 8–40 m. Marine species.

Gymnocranius elongatus Senta, 1973. – Taxonomy: First record from New Caledonia by Béarez (2003: 62). DASMN and MNHN material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 50–100 m. Marine species.

Gymnocranius euanus (Günther, 1879) – Bossu blanc à points noirs, bossu rose. – Taxonomy: First record from New Caledonia by Wantiez (1992: 946); previously reported as *Gymnocranius japonicus* by Fourmanoir & Laboute (1976: 95). – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14; AU: 17, 18. Depth: 5–50 m. Marine species.

Gymnocranius grandoculis (Valenciennes in Cuvier & Valenciennes, 1830) – Bossu blanc grosse race. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 24); previously reported as *Gymnocranius rivulatus* by Fourmanoir & Laboute (1976: 94), and as *Gymnocranius robertsi* by Kulbicki (1988b: 306). – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 14. Depth: 5–170 m. Marine species.

Gymnocranius oblongus Borsa, Béarez & Chen, 2010 – Bossu blanc à nageoires roses. – Taxonomy: Recorded from New Caledonia in original description by Borsa et al. (2010); previously reported as *Gymnocranius lethrinoides* (non Bleeker, 1850) by Fourmanoir & Laboute (1976: 95), and as *Gymnocranius* sp., related to *Gymnocranius lethrinoides* Bleeker, 1850 by Béarez (2003: 62). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 10–170 m. Marine species.

Lethrinus atkinsoni (Seale, 1909) – Bossu doré. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 24); previously reported as *Lethrinus mahsena* (non Forsskål in Niebuhr, 1775) by Fourmanoir & Laboute (1976: 87), and subsequently as *Lethrinus* sp. by Laboute & Grandperrin (2000: 272). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17. Depth: 2–30 m. Marine species.

Lethrinus erythracanthus Valenciennes in Cuvier & Valenciennes, 1830 – Bossu capitaine. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 24); previously reported as *Lethrinus kallopterus* by Rivaton et al. (1990: 48). – Distribution: NC: 1, 5, 6, 7, 8, 14. Depth: 18–120 m. Marine species.

Lethrinus genivittatus Valenciennes in Cuvier & Valenciennes, 1830 – Communard. – Taxonomy: First record from

New Caledonia by WANTIEZ (1992: 946, 948); previously reported as *Lethrinus nematacanthus* by WHITLEY (1961: 64). AMS and IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], 10, 14. Depth: 5–25 m. Marine species.

Lethrinus harak (Forsskål in Niebuhr, 1775) – Bossu tâché. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 86); previously reported as *Lethrinus glyphodon* (non Günther, 1859) by WHITLEY (1961: 64). AMS, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 14. Depth: 1–20 m. Marine species.

Lethrinus laticaudis Alleyne & Macleay, 1877. – Taxonomy: First record from New Caledonia (Grande Terre) by JOHNSON (1999: 737); previously described as *Lethrinus anarhynchus* by POSTEL (1965b: 247–250). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 0–20 m. Transitional water and marine.

Lethrinus lentjan (Lacepède, 1802) – Bossu d'herbe. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 86). – Distribution: NC: 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17. Depth: 0–90 m. Transitional water and marine.

Lethrinus miniatus (Bloch & Schneider [ex Forster], 1801) – Gueule rouge. – Taxonomy: Orignally described from New Caledonia (and Tonga) as *Sparus miniatus* by BLOCH & SCHNEIDER [ex FORSTER] (1801: 281); subsequently reported as *Lethrinus chrysostomus* by PLESSIS & FOURMANOIR (1966c: 133), and as *Lethrinus microdon* (non Valenciennes in Cuvier & Valenciennes, 1830) by RIVATON et al. (1990: 48). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], 10, [11], [12], 14; AU: 17, 18. Depth: 1–30 m. Transitional water and marine.

Lethrinus nebulosus (Forsskål in Niebuhr, 1775) – Bec de cane, lethrinus nuageux. – Taxonomy: First record from New Caledonia by BORODIN (1932: 83); also reported as *Lethrinus hematopterus* (non Temminck & Schlegel, 1844) by BORODIN (1932: 83). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–75 m. Marine species.

Lethrinus obsoletus (Forsskål in Niebuhr, 1775) – Bossu d'herbe. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 88); previously reported as *Lethrinus ramak* by RIVATON et al. (1990: 48). – Distribution: NC: 5, 6, 7, 8, [9], [10], 11, [12], 14. Depth: 1–30 m. Marine species.

Lethrinus olivaceus Valenciennes in Cuvier & Valenciennes, 1830 – Bec de cane allongé, bec de cane malabar, lethrinus à museau long. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 48) and WANTIEZ (1992: 946); previously reported as *Lethrinus rostratus* by BORODIN (1932: 82). – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 14. Depth: 1–185 m. Marine species.

Lethrinus ravus Carpenter & Randall, 2003. – Taxonomy: Originally described from New Caledonia by CARPENTER & RANDALL (2003: 3); previously reported as *Lethrinus* sp. by KULBICKI & WANTIEZ (1990: 124), and as *Lethrinus* sp. 2 by CARPENTER (2001b: 3047). BPBM material (holotype). – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 8–35 m. Marine species.

Lethrinus rubrioperculatus Sato, 1978 – Bossu rond. – Taxonomy: First record from New Caledonia by KULBICKI (1988b: 306). – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 14. Depth: 10–198 m. Marine species.

Lethrinus semicinctus Valenciennes in Cuvier & Valenciennes, 1830 – Empereur emaill. – Taxonomy: First record from New Caledonia by THOLLOT & KULBICKI (1988: 618). IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 0–30 m. Marine species.

Lethrinus variegatus Valenciennes [ex Ehrenberg] in Cuvier & Valenciennes, 1830 – Bossu varié, bossu rond. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 88). IRDNC and USNM material. – Distribution: NC: 5, 6, [7], 8, [9], 10, 14. Depth: 0–40 m. Marine species.

Lethrinus xanthochilus Klunzinger, 1870 – Gueule d'acier, bec de cane à lèvres jaunes. – Taxonomy: First record from New Caledonia as *Lethrinus xanthocheilus* by FOURMANOIR & LABOUTE (1976: 37, 88). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 14. Depth: 0–150 m. Marine species.

Monotaxis grandoculis (Forsskål in Niebuhr, 1775) – Brême aux gros yeux. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 95). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–60 m. Marine species.

Monotaxis heterodon (Bleeker, 1854). – Taxonomy: First record from New Caledonia by RANDALL (2005a: 281). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–60 m. Marine species.

Wattsia mossambica (Smith, 1957) – Bossu olive, brême olive, bossu jaune. – Taxonomy: First record from New Caledonia as *Gnathodentex mossambicus* by FOURMANOIR & RIVATON (1979: 431). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 100–200 m. Marine species.

Sparidae

**Acanthopagrus akazakii* Iwatsuki, Kimura & Yoshino, 2006. – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) by IWATSUKI et al. (2006: 409–411). FRLM, MNHN, MUFS and USNM material. – Distribution: NC: [5], [7], 8, [10]. Depth: 0–20 m. Marine species.

Acanthopagrus berda (Forsskål in Niebuhr, 1775). – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 103). USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–50 m. Freshwater, transitional water and marine.

**Acanthopagrus novaecaledoniae* (Castelnau, 1873). – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) as *Chrysophrys novae caledoniae* by CASTELNAU (1873: 110). NMV material (holotype). – Distribution: NC: [5], [7], 8, [10]. Depth: 0–20 m. Marine species.

**Dentex fourmanoiri* Akazaki & Séret, 1999. – Taxonomy: Originally described from New Caledonia by AKAZAKI & SÉRET (1999: 179). MNHN material (holotype). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], 12. Depth: 210–290 m. Marine species.

Polynemidae

Eleutheronema tetradactylum (Shaw, 1804) – Barbure mamali. – Taxonomy: First record from New Caledonia by WHITLEY (1961: 64). AMS material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–23 m. Freshwater, transitional water and marine.

Polydactylus microstomus (Bleeker, 1851) – Mulet bâtard. – Taxonomy: First record from New Caledonia by Thollot & Kulbicki (1988: 618). IRDNC and MUFS material. – Distribution: NC: 6, [7], 8, [9], [10]. Depth: 1–55 m. Transitional water and marine.

Polydactylus plebeius (Broussonet, 1782) – Capitaine. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 306). MUFS material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–122 m. Transitional water and marine.

Polydactylus sexfilis (Valenciennes in Cuvier & Valenciennes, 1831). – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 137). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–50 m. Freshwater, transitional water and marine.

Mullidae

Mulloidichthys flavolineatus (Lacepède [ex Commerson], 1801) – Surmullet cordon jaune. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 113); previously reported as *Mulloidichthys samoensis* by Plessis & Fourmanoir (1966c: 129). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 1–35 m. Marine species.

Mulloidichthys pfluegeri (Steindachner, 1900). – Taxonomy: First record from New Caledonia as *Mulloides pflugeri* by Rivaton et al. (1990: 53). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 30–110 m. Marine species.

Mulloidichthys vanicolensis (Valenciennes in Cuvier & Valenciennes, 1831) – Surmullet de Vanicolo. – Taxonomy: First record from New Caledonia as *Mulloides vanicolensis* by Rivaton et al. (1990: 53) and Kulbicki & Williams (1997: 16). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], [11], 12, 14; AU: 17, 18; NZ: 20. Depth: 2–113 m. Marine species.

Parupeneus barberinoides (Bleeker, 1852) – Barbet moitié moitié. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 196). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 2–40 m. Marine species.

Parupeneus barberinus (Lacepède [ex Commerson], 1801) – Barbet rayé, barberin. – Taxonomy: First record from New Caledonia as *Upeneus barberinus* by Whitley (1961: 65). AMS, BMNH and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17. Depth: 1–100 m. Marine species.

Parupeneus ciliatus (Lacepède, 1802) – Rouget barbet. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 24); previously reported as *Parupeneus porphyreus* (non Jenkins, 1903) by Fourmanoir & Laboute (1976: 199), and as *Parupeneus dispilurus* (non Playfair in Playfair & Günther, 1867) by Rivaton et al. (1990: 53). BPBM, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 1–91 m. Marine species.

Parupeneus crassilabris (Valenciennes in Cuvier & Valenciennes, 1831) – Barbet à deux bandes, rouget à trois bandes. – Taxonomy: First record from New Caledonia by Randall & Myers (2002: 432); previously reported as *Parupeneus bifasciatus* (non Lacepède, 1801) by Fourmanoir & Laboute (1976: 196). – Distribution: NC: 5, 6, 7, 8, [9], 10, [11], 12, 14. Depth: 1–40 m. Marine species.

Parupeneus cyclostomus (Lacepède [ex Commerson], 1801) – Barbet à selle d'or. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 53) and Kulbicki et al. (1994: 24); previously reported as *Parupeneus chryserydros* by Fourmanoir & Laboute (1976: 197). BPBM and IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–100 m. Marine species.

Parupeneus heptacanthus (Lacepède, 1802) – Barbé à point rouge. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 53) and Wantiez (1992: 947); previously reported as *Upeneus cinnaborinus* by Borodin (1932: 84), and as *Parupeneus pleurospilos* by Fourmanoir & Laboute (1976: 198). BPBM and MNHN material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17. Depth: 12–100 m. Marine species.

Parupeneus indicus (Shaw [ex Russell], 1803) – Barbet soufré. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 197); previously reported as *Pseudupeneus filamentosus* (non Macleay, 1883) by Whitley (1961: 65). AMS, IRDNC and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–20 m. Marine species.

Parupeneus multifasciatus (Quoy & Gaimard, 1825) – Rouget à trois bandes. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 197); subsequently reported as *Parupeneus trifasciatus* (non Lacepède, 1801) by Wantiez (1992: 947). MNHN, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 1–161 m. Marine species.

Parupeneus pleurostigma (Bennett, 1831) – Barbet à tâche noire. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 198). MNHN and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 1–46 m. Marine species.

Parupeneus spilurus (Bleeker, 1854) – Rouget-barbet à tâche noire. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 199); previously reported as *Caprupeneus jeffi* by Whitley (1961: 64), and subsequently as *Parupeneus signatus* by Thollot & Kulbicki (1988: 618). AMS, MNHN and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18; NZ: 20, 23. Depth: 2–50 m. Marine species.

Upeneus australiae Kim & Nakaya, 2002. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 336) and Randall & Kulbicki (2006: 299–300); previously reported as *Upeneus* sp. by Kulbicki et al. (1994: 25). BPBM material. – Distribution: NC: 1, 5, 6, 7, 8, 14. Depth: 3–82 m. Marine species.

Upeneus filifer (Ogilby, 1910). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 24). BPBM material. – Distribution: NC: 1, 3, [5], [6], [7], 8, [9], [10]. Depth: 60–80 m. Marine species.

Upeneus guttatus (Day, 1868). – Taxonomy: First record from New Caledonia by Randall & Kulbicki (2006: 301); previously reported as *Upeneus* sp. by Rivaton (1989: 152). BPBM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 70–92 m. Marine species.

Upeneus moluccensis (Bleeker, 1855) – Rouget à bande d'or. – Taxonomy: First record from New Caledonia as *Upeneus*

mollucensis by THOLLOT & KULBICKI (1988: 615); subsequently reported as '*Upeneus* sp. aff. *asymmetricus*' by KULBICKI & WANTIEZ (1990: 124, 129). BPBM and IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 10–120 m. Marine species.

**Upeneus mouthami* Randall & Kulbicki, 2006. – Taxonomy: Originally described from New Caledonia (Chesterfield Islands) by RANDALL & KULBICKI (2006: 302–304); previously reported as '*Upeneus* sp. (barbillon jaune)' by RIVATON et al. (1990: 54). AMS, BPBM, MNHN, NSMT and USNM material. – Distribution: NC: 1, [5], [7]. Depth: 60–76 m. Marine species.

Upeneus sulphureus Cuvier in Cuvier & Valenciennes, 1829 – Rouget aurore. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 54) and KULBICKI & WANTIEZ (1990: 124). BPBM and IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–90 m. Transitional water and marine.

Upeneus tragula Richardson, 1846 – Capucin d'herbier. – Taxonomy: First record from New Caledonia by PLESSIS & FOURMANOIR (1966c: 129); subsequently reported as *Upeneus* sp. by KULBICKI & WANTIEZ (1990: 124). BPBM, IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], 10, 14. Depth: 3–40 m. Marine species.

Upeneus vittatus (Forsskål in Niebuhr, 1775) – Barbet rayé. – Taxonomy: First record from New Caledonia by JOUAN (1861: 295–296). BPBM and IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 14. Depth: 0–130 m. Transitional water and marine.

Pempheridae

Parapriacanthus dispar (Herre, 1935). – Taxonomy: First record from New Caledonia by RANDALL (2005a: 302). – Distribution: NC: 1, [5], [6], [7], [8], 9, [10]. Depth: 0–40 m. Marine species.

**Parapriacanthus marei* Fourmanoir, 1971. – Taxonomy: Originally described from New Caledonia by FOURMANOIR (1971c: 498–499). MNHN material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–20 m. Marine species.

Parapriacanthus ransonneti Steindachner, 1870. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 59) and KULBICKI et al. (1994: 25); previously reported as *Parapriacanthus beryciformes* by FOURMANOIR & LABOUTE (1976: 292–293). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], 12, 14; AU: 17, 18. Depth: 0–76 m. Marine species.

Pempheris oualensis Cuvier in Cuvier & Valenciennes, 1831. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 292); subsequently reported as *Pempheris otaitensis* (non Cuvier in Cuvier & Valencienes, 1831) by LABOUTE & GRANDPERRIN (2000: 287, 288). IRDNC, SMNS and USNM material. – Distribution: NC: [1], 5, [6], 7, 8, 9, [10], [11], 12, 14; AU: 17. Depth: 1–36 m. Marine species.

Pempheris schwenkii Bleeker, 1855. – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 25). IRDNC and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–40 m. Marine species.

Pempheris vanicolensis Cuvier in Cuvier & Valenciennes, 1831. – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by EVANS (2006: 99). – Distribution: NC: [5], [6], [7], [8], [9], [10], [11], [12]; AU: 17. Depth: 0–25 m. Marine species.

Bathyclupeidae

Bathyclupea malayana Weber, 1913. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 27) and RIVATON & BOURRET (1999: 322). IRDNC material. – Distribution: NC: 4, [5], [6], [7], 8, [9], [10]. Depth: 538–880 m. Marine species.

Monodactylidae

Monodactylus argenteus (Linnaeus, 1758) – Cerf-volant, lune d'argent. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 236). IRDNC material. – Distribution: NC: 1, [5], [6], 7, 8, [9], [10], 12; AU: [17], 18. Depth: 0–12 m. Freshwater, transitional water and marine.

Kyphosidae

Kyphosus cinerascens (Forsskål in Niebuhr, 1775) – Ui-ua. – Taxonomy: First record from New Caledonia as *Pimelepterus cinerascens* by BORODIN (1932: 84); subsequently reported as *Kyphosus sydneyanus* (non Günther, 1886) by RANDALL (2005a: 306). – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], [11], 12, 14; AU: 17, 18. Depth: 0–24 m. Marine species.

Kyphosus pacificus Sakai & Nakabo, 2004. – Taxonomy: First record from New Caledonia by FRICKE & KULBICKI (2006: 337); previously reported as *Kyphosus bigibbus* (non Lacepède, 1801) by FOURMANOIR & LABOUTE (1976: 236), and as '*Kyphosus* sp. 1' by LABOUTE & GRANDPERRIN (2000: 288). – Distribution: NC: [5], [6], [7], 8, [9], 10, [11], [12], 14, 16; AU: 17, 18; NZ: 20, 23. Depth: 0–20 m. Marine species.

Kyphosus sydneyanus (Günther, 1886). – Taxonomy: First record from New Caledonia by FRICKE & KULBICKI (2006: 337); previously reported as '*Kyphosus* sp. 2' by LABOUTE & GRANDPERRIN (2000: 289). – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12]; AU: [17], 18; NZ: 21, 23, 24, 26. Depth: 0–20 m. Transitional water and marine.

Kyphosus vaigiensis (Quoy & Gaimard, 1825) – Ui-ua. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 236). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: [17], 18; NZ: 23. Depth: 0–24 m. Marine species.

Microcanthus strigatus (Cuvier [ex Langsdorf] in Cuvier & Valenciennes, 1831) – Footballeur à bandes noires, poisson Nagasaki. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 230). IRDNC and SMNS material. – Distribution: NC: 1, [5], 6, [7], 8, [9], [10], [11], 12; AU: 17, 18. Depth: 0–140 m. Transitional water and marine.

Drepaneidae

Drepane punctata (Linnaeus, 1758) – Roussette tâchetée. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 38) and KULBICKI et al. (1993: 28). USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 1–49 m. Transitional water and marine.

Chaetodontidae

Amphichaetodon howensis (Waite, 1903). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Kulbicki et al. (1994: 25). – Distribution: NC: 1, [5], [7]; AU: 18; NZ: 20, 21, 23, 25. Depth: 10–200 m. Marine species.

Chaetodon auriga Forsskål in Niebuhr, 1775 – Chaetodon cocher. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 130); previously reported as *Chaetodon* sp. by Jouan (1861: 257–258). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18; NZ: 20. Depth: 0–35 m. Marine species.

Chaetodon baronessa Cuvier, 1829 – Chaetodon baronne. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 226). – Distribution: NC: 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 1–20 m. Marine species.

Chaetodon bennetti Cuvier in Cuvier & Valenciennes, 1831 – Chaetodon à deux lignes bleues, chaetodon de Bennett. – Taxonomy: First record from New Caledonia as *Rhabdophorus bennetti* by Whitley (1961: 65). AMS and IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–30 m. Marine species.

Chaetodon citrinellus Cuvier [ex Broussonet] in Cuvier & Valenciennes, 1831 – Chaetodon citronnet, poisson papillon tâcheté. – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 1–36 m. Marine species.

Chaetodon ephippium Cuvier in Cuvier & Valenciennes, 1831 – Chaetodon à selles noires. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 224). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–30 m. Marine species.

Chaetodon flavirostris Günther, 1874 – Chaetodon à nez jaune, poisson papillon noir. – Taxonomy: First record from New Caledonia by Borodin (1932: 86). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–20 m. Marine species.

Chaetodon guentheri Ahl, 1923. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 33) and Kulbicki et al. (1994: 25). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10]; AU: 17. Depth: 5–40 m. Marine species.

Chaetodon kleinii Bloch, 1790 – Chaetodon de Klein. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 225). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17. Depth: 2–61 m. Marine species.

Chaetodon lineolatus Cuvier [ex Quoy & Gaimard] in Cuvier & Valenciennes, 1831 – Chaetodon linéolé, poisson papillon strié. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 130). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–5 m. Marine species.

Chaetodon lunula (Lacepède [ex Commerson], 1802) – Chaetodon à croissant, chaetodon à raies rouges, chaetodon ratonlaveur. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 225). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17, 18. Depth: 0–30 m. Marine species.

Chaetodon lunulatus Quoy & Gaimard, 1825 – Chaetodon à trois bandes, chaetodon à bord rouge. – Taxonomy: First record from New Caledonia by Randall (2005a: 315); previously reported as *Chaetodon trifasciatus* (non Park, 1797) by Borodin (1932: 86). AMS, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–20 m. Marine species.

Chaetodon melannotus Bloch & Schneider, 1801 – Chaetodon à dos noir. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 130). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–20 m. Marine species.

Chaetodon mertensii Cuvier in Cuvier & Valenciennes, 1831 – Chaetodon de Mertens. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 225); previously reported as *Chaetodon dixsoni* by Whitley (1961: 64). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 8–40 m. Marine species.

Chaetodon meyeri Bloch & Schneider, 1801. – Taxonomy: First record from New Caledonia by Randall (2005a: 316). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 2–25 m. Marine species.

Chaetodon ornatissimus Cuvier [ex Solander] in Cuvier & Valenciennes, 1831 – Chaetodon à bandes oranges, poisson papillon orné. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 226). – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17. Depth: 1–36 m. Marine species.

Chaetodon pelewensis Kner, 1868 – Chaetodon de Palau, chaetodon à points-tirets. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 226). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 1–30 m. Marine species.

Chaetodon plebeius Cuvier [ex Broussonet] in Cuvier & Valenciennes, 1831 – Chaetodon plébéien, poisson à tâches bleues. – Taxonomy: First record from New Caledonia as *Tetrachaetodon plebeius* by Whitley (1961: 65). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–10 m. Marine species.

Chaetodon rafflesii Anonymous [Bennett], 1830. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 34) and Kulbicki & Williams (1997: 17). IRDNC and SMNS material. – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–15 m. Transitional water and marine.

Chaetodon reticulatus Cuvier in Cuvier & Valenciennes, 1831 – Chaetodon maillé, poisson papillon réticulé. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 226). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 1–30 m. Marine species.

Chaetodon semeion Bleeker, 1855. – Taxonomy: First record from New Caledonia by Pyle (2001a: 3251). – Distribution: NC: 5, 6, 7, 8, 9, [10], 14. Depth: 2–30 m. Marine species.

Chaetodon speculum Cuvier [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1831 – Chaetodon à miroir, chaetodon à tâche ovale. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 226). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–30 m. Marine species.

Chaetodon trifascialis Quoy & Gaimard, 1825 – Chaetodon tête de flèche, poisson papillon à chevrons. – Taxonomy: First record from New Caledonia by Whitley (1961: 64). AMS and IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–30 m. Marine species.

Chaetodon ulietensis Cuvier in Cuvier & Valenciennes, 1831 – Chaetodon d'Uliétéa, chaetodon à double selle du Pacifique. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 224); previously reported as *Chaetodon falcula* (non Bloch, 1795) by Plessis & Fourmanoir (1966c: 130). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, [13], 14; AU: 17. Depth: 2–30 m. Marine species.

Chaetodon unimaculatus Bloch, 1787 – Chaetodon à tâche noire, poisson papillon larme. – Taxonomy: First record from New Caledonia by Borodin (1936: 86). AMS and IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], [11], 12, 14; AU: 17. Depth: 0–60 m. Marine species.

Chaetodon vagabundus Linnaeus, 1758 – Chétodon à vagabond. – Taxonomy: First record from New Caledonia by Fourmanoir (1981: 27). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–30 m. Marine species.

Coradion altivelis McCulloch, 1916 – Coradion à grande voile. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 227). IRDNC material. – Distribution: NC: 1, [5], [6], [7], 8, [9], 10, 14. Depth: 3–30 m. Marine species.

Forcipiger flavissimus Jordan & McGregor in Jordan & Evermann, 1898 – Papillon à long museau, poisson-pincette jaune. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 228). IRDNC material. – Distribution: NC: 1, 5, 6, [7], 8, [9], 10, 11, [12], 14; AU: 17, 18; NZ: 20, 23. Depth: 1–80 m. Marine species.

Forcipiger longirostris (Broussonet, 1782) – Papillon à long museau, poisson-pincette à long bec. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 228). – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 3–70 m. Marine species.

Hemitaurichthys polylepis (Bleeker, 1857) – Poisson papillon pyramide jaune. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 228); previously reported as *Hemitaurichthys zoster* (non Bennett, 1831) by Whitley (1961: 64). AMS and USNM material. – Distribution: NC: [5], 6, [7], 8, [9], [10], 14. Depth: 3–40 m. Marine species.

Heniochus acuminatus (Linnaeus, 1758) – Heniochus pointu, heniochus commun. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 228); previously reported as *Chaetodon* sp. by Jouan (1861: 258–259). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, 12, 14; AU: 17. Depth: 2–178 m. Marine species.

Heniochus chrysostomus Cuvier [ex Parkinson] in Cuvier & Valenciennes, 1831 – Poisson-cocher du pacifique. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 34) and Kulbicki et al. (1993: 28); previously reported as *Heniochus permutatus* by Whitley (1961: 64). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–40 m. Marine species.

Heniochus monoceros Cuvier in Cuvier & Valenciennes, 1831 – Heniochus cornu, poisson-cocher masqué. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 131). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: [17], 18. Depth: 0–30 m. Marine species.

Heniochus singularius Smith & Radcliffe, 1911 – Heniochus singulier, poisson-cocher malais. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 230). IRDNC material. – Distribution: NC: 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 2–40 m. Marine species.

Heniochus varius (Cuvier, 1829) – Heniochus bossu, poisson-cocher noir, taureau de mer. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 113, 117). – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 2–20 m. Marine species.

Prognathodes guyotensis (Yamamoto & Tameka in Okamura, Amaoka & Mitani, 1982). – Taxonomy: First record from New Caledonia as *Chaetodon guyotensis* by Rivaton et al. (1990: 33), and as *Prognathodes guyotensis* by Fricke & Kulbicki (2006: 337). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 280–320 m. Marine species.

Pomacanthidae

Apolemichthys trimaculatus (Cuvier [ex Lacepède] in Cuvier & Valenciennes, 1831) – Poisson ange à nez bleu, Holacanthe à trois tâches. – Taxonomy: First record from New Caledonia as *Holacanthus trimaculatus* by Fourmanoir & Laboute (1976: 232). – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 2–40 m. Marine species.

Centropyge bicolor (Bloch, 1787) – Poisson ange jaune et bleu. – Taxonomy: First record from New Caledonia by Whitley (1961: 64). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–25 m. Marine species.

Centropyge bispinosa (Günther, 1860) – Poisson ange à deux épines. – Taxonomy: First record from New Caledonia as *Holacanthus bispinosa* by Borodin (1932: 86). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 3–45 m. Marine species.

Centropyge fisheri (Snyder, 1904) – Poisson ange à queue blanche. – Taxonomy: First record from New Caledonia as *Centropyge flavicauda* by Rivaton et al. (1990: 62), Rivaton & Richer de Forges (1990: 32), and Kulbicki et al. (1994: 26). – Distribution: NC: 1, 5, [6], [7], [8], [9], [10], 14. Depth: 10–95 m. Marine species.

Centropyge flavissima (Cuvier in Cuvier & Valenciennes, 1831) – Centropyge tout jaune. – Taxonomy: First record from New Caledonia as *Centropyge flavissimus* by Fourmanoir & Laboute (1976: 231). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 3–50 m. Marine species.

Centropyge heraldi Woods & Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953 – Poisson ange doré. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 62) and Kulbicki et al. (1994: 26). BPBM material. – Distribution: NC: 1, [5], 6, 7, 8, [9], [10], [11], 12, 14. Depth: 5–90 m. Marine species.

Centropyge loricula (Günther, 1874). – Taxonomy: First record from New Caledonia as *Centropyge loriculus* by

KULBICKI & WILLIAMS (1997: 17). – Distribution: NC: 1, [5], 6, 7, 8, [9], [10], 14. Depth: 15–60 m. Marine species.

Centropyge multifasciata (Smith & Radcliffe, 1911). – Taxonomy: First record from New Caledonia as *Centropyge multifasciatus* by KULBICKI & WILLIAMS (1997: 17). IRDNC and USNM material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 7–70 m. Marine species.

Centropyge nigriocella Woods & Schultz in Schultz, Herald, Lachner, Welander & Woods, 1953. – Taxonomy: First record from New Caledonia (Loyalty Islands) as *Centropyge nigrocellus* by KULBICKI & WILLIAMS (1997: 17). USNM material. – Distribution: NC: [5], [7], 14. Depth: 4–15 m. Marine species.

Centropyge nox (Bleeker, 1853). – Taxonomy: First record from New Caledonia by MYERS (1999: 171). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 3–70 m. Marine species.

Centropyge tibicen (Cuvier in Cuvier & Valenciennes, 1831) – Centropyge joueur de flûte. – Taxonomy: First record from New Caledonia by WHITLEY (1961: 64). AMS, IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 1–55 m. Marine species.

Centropyge vrolikii (Bleeker, 1853). – Taxonomy: First record from New Caledonia as *Centropyge vrolicki* by RIVATON et al. (1990: 62) and KULBICKI et al. (1994: 26). BPBM and IRDNC material. – Distribution: NC: 1, 5, 6, [7], 8, 9, [10], 11, 12, 14; AU: 17. Depth: 3–25 m. Marine species.

Chaetodontoplus conspicillatus (Waite, 1900) – Chaetodon armé à monocle. – Taxonomy: First record from New Caledonia by WHITLEY (1961: 64). AMS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], 10, 11, [12]; AU: 17, 18. Depth: 1–100 m. Marine species.

Genicanthus melanospilos (Bleeker, 1857) – Poisson ange zèbre. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 232). – Distribution: NC: 5, [6], [7], 8, [9], [10], 14. Depth: 20–45 m. Marine species.

Genicanthus watanabei (Yasuda & Tominaga, 1970) – Poisson ange à raie jaune. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 232). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 20–81 m. Marine species.

Pomacanthus annularis (Bloch, 1787). – Taxonomy: First record from New Caledonia by PYLE (2001b: 3284). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 5–30 m. Marine species.

Pomacanthus imperator (Bloch, 1787) – Poisson ange impérial. – Taxonomy: First record from New Caledonia by WHITLEY (1961: 65). AMS and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17. Depth: 1–100 m. Marine species.

Pomacanthus semicirculatus (Cuvier in Cuvier & Valenciennes, 1831) – Poisson ange bleu, pomacanthe à demi-cercles. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 234–235). IRDNC and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 1–30 m. Marine species.

Pomacanthus sexstriatus (Cuvier [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1831) – Poisson ange à six bandes. – Taxonomy: First record from New Caledonia as *Euxiphipops sexstriatus* by FOURMANOIR & LABOUTE (1976: 232). IRDNC material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 14. Depth: 3–50 m. Marine species.

Pomacanthus xanthometopon (Bleeker, 1853). – Taxonomy: First record from New Caledonia by PYLE (2001b: 3286). – Distribution: NC: [5], 6, 7, 8, [9], [10]. Depth: 5–25 m. Marine species.

Pygoplites diacanthus (Boddaert, 1772) – Poisson ange à bandes bleues, poisson duc. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 231). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–48 m. Marine species.

Pentacerotidae

Evistias acutirostris (Temminck & Schlegel, 1844). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 59) and LABOUTE & GRANDPERRIN (2000: 311). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12], 14, 16; AU: 17, [18]; NZ: 20, 23. Depth: 18–193 m. Marine species.

Pentaceros decacanthus Günther, 1859. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by KULBICKI et al. (1994: 26). – Distribution: NC: 1, [5], [7]; AU: 17, [18]; NZ: 19, 20, 23, 24, 25, 26, [27], 28, 29, 30. Depth: 37–460 m. Marine species.

Pentaceros japonicus Steindachner, 1883. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 59) and KULBICKI et al. (1994: 26). IRDNC material. – Distribution: NC: 1, [5], [7]. Depth: 100–830 m. Marine species.

Pseudopentaceros richardsoni (Smith, 1844). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 59) and KULBICKI et al. (1994: 26). IRDNC material. – Distribution: NC: 1, [5], [7]; AU: [17], [18]; NZ: [19], 20, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–1000 m. Marine species.

Terapontidae

Mesopristes kneri (Bleeker, 1876). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 75), RIVATON & BOURRET (1999: 70), and FRICKE & KULBICKI (2006: 338). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–8 m. Freshwater, transitional water and marine.

Terapon jarbua (Forsskål in Niebuhr, 1775) – Relégué, violon; Kao-uo (Canala). – Taxonomy: First record from New Caledonia (Grande Terre) as *Therapon jarbua* by PLESSIS & FOURMANOIR (1966c: 126); previously reported as *Therapon servus* by JOUAN (1863: 184). IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, [10]; AU: 17. Depth: 0–20 m. Freshwater, transitional water and marine.

Terapon theraps Cuvier in Cuvier & Valenciennes, 1829. – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 208). – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–10 m. Freshwater, transitional water and marine.

Kuhliidae

Kuhlia marginata (Cuvier in Cuvier & Valenciennes, 1829) – Doule à queue rouge, kuhlie marginée; Didi (Paici). – Taxonomy: First record from New Caledonia by WEBER & BEAUFORT (1915: 30). IRDNC material. – Distribution: NC: [5], 6, [7], 8, 9, 10, 12. Depth: 0–2 m. Freshwater, transitional water and marine.

Kuhlia mugil (Bloch & Schneider [ex Forster], 1801). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 44) and Kulbicki et al. (1994: 20). BPBM, IRDNC, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], 12, 14; AU: 17, 18; NZ: 20. Depth: 0–5 m. Freshwater, transitional water and marine.

Kuhlia munda (De Vis, 1884) – Doule à queue jaune; Didi-wawi (Paici). – Taxonomy: First record from New Caledonia by Marquet et al. (1997: 29); previously reported as *Kuhlia humilis* by Weber & Beaufort (1915: 29–30). MNHN material. – Distribution: NC: [5], [7], 8, 9, 10, 12. Depth: 0–2 m. Freshwater, transitional water and marine.

Kuhlia rupestris (Lacepède, 1802) – Carpe, doule, maraudeur, kuhlie des rochers; Thavit (Jawe), Punaak (Nemi), Didi (Paici), Hwa (Pije). – Taxonomy: First record from New Caledonia by Weber & Beaufort (1915: 28–29); previously described as *Kuhlia rupestris hedleyi* by Ogilby (1898: 767–768). AMS, IRDNC and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10. Depth: 0–2 m. Freshwater, transitional water and marine.

Cirrhitidae

Amblycirrhitus bimacula (Jenkins, 1903) – Épervier. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Rivaton et al. (1990: 35) and Kulbicki & Williams (1997: 19). IRDNC, SMNS and USNM material. – Distribution: NC: 8, 14. Depth: 0–20 m. Marine species.

Cirrhitichthys falco Randall, 1963 – Épervier à joue épineuse. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 282). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 1–46 m. Marine species.

Cirrhitichthys oxycephalus (Bleeker, 1855) – Épervier à tâches rouges. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 282). – Distribution: NC: [6], 7, 8, [9], [10], 11, [12], 14. Depth: 1–40 m. Marine species.

Cirrhitus pinnulatus (Bloch & Schneider [ex Forster], 1801) – Épervier. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 330). – Distribution: NC: 5, [6], 7, 8, [9], [10], [11], [12]; NZ: 20. Depth: 0–3 m. Marine species.

Cyprinocirrhites polyactis (Bleeker, 1874) – Cirrhite à nombreux rayons. – Taxonomy: First record from New Caledonia by Fourmanoir (1973: 34). – Distribution: NC: 1, [6], [7], 8, [9], [10], 14. Depth: 10–132 m. Marine species.

Neocirrhites armatus Castelnau, 1873. – Taxonomy: First record from New Caledonia (Grande Terre) by Evans (2006: 94). AMS material. – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 1–10 m. Marine species.

Oxycirrhites typus Bleeker, 1857. – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 35) and Fricke (1999: 355). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 10–100 m. Marine species.

Paracirrhites arcatus (Cuvier [ex Parkinson] in Cuvier & Valenciennes, 1829) – Cirrhite à tempe annelée. – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17, 18. Depth: 1–33 m. Marine species.

Paracirrhites forsteri (Schneider in Bloch & Schneider, 1801) – Épervier à tête ponctuée. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 283). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17, 18. Depth: 1–33 m. Marine species.

Paracirrhites hemistictus (Günther, 1874) – Épervier tâcheté. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 284). – Distribution: NC: 5, 6, 7, 8, 9, [10], 14, 15. Depth: 1–20 m. Marine species.

Cheilodactylidae

Goniistius francisi (Burridge, 2004). – Taxonomy: Reported from New Caledonia in original description as *Cheilodactylus (Goniistius) francisi* by Burridge (2004); previously reported as *Cheilodactylus vittatus* (non Garrett, 1864) by Rivaton et al. (1990: 35) and Burridge (2002: 152). – Distribution: NC: 8, [10], [11], 12; AU: 17; NZ: 20. Depth: 0–88 m. Marine species.

Goniistius vestitus (Castelnau, 1879). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 35) and Randall et al. (1997: 519); previously reported as *Goniistius gibbosus* (non Richardson, 1841) by Fourmanoir & Laboute (1976: 284). – Distribution: NC: 8, 10, 11, [12]; AU: 17, 18. Depth: 0–30 m. Marine species.

Cepolidae

Owstonia sp. – Taxonomy: Reported from New Caledonia (Loyalty Islands) by Rivaton et al. (1990: 59) and Rivaton & Richer de Forges (1990: 31); previously reported as '*Sphenanthias* (*simopterus* Smith (J. L. B.) 1968?)' by Fourmanoir (1976: 54–56). SMNS material. – Distribution: NC: 14. Depth: 65–116 m. Marine species.

Cichlidae

Oreochromis mossambicus (Peters, 1852) – Tilapia du Mossambique, tilapia, lapia. – Taxonomy: Reported from New Caledonia by Rivaton et al. (1990: 35) and Thollot (1996a: 12). IRDNC and SMNS material. – Distribution: NC: 8, 9, 10. Introduced, not native. Freshwater species.

Sarotherodon occidentalis (Daget, 1962) – Tilapia, lapia. – Taxonomy: Reported from New Caledonia by Marquet et al. (1997: 30). – Distribution: NC: 8, 9, 10. Introduced, not native. Freshwater species.

Pomacentridae

Abudefduf septemfasciatus (Cuvier in Cuvier & Valenciennes, 1830). – Taxonomy: First record from New Caledonia by Allen (1975: 230). – Distribution: NC: 5, 6, [7], 8, [9], [10]. Depth: 0–3 m. Marine species.

Abudefduf sexfasciatus (Lacepède, 1801) – Sergent major à queue en ciseaux. – Taxonomy: First record from New Caledonia by Allen (1975: 230); previously reported as *Glyphisodon coelestinus* by Whitley (1961: 64). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–15 m. Marine species.

Abudefduf sordidus (Forsskål in Niebuhr, 1775) – Sergent à tâche noire. – Taxonomy: First record from New Caledonia by Borodin (1932: 92); also reported as *Glyphidodon leucopleurus* by Borodin (1932: 93). SMNS material. –

Distribution: NC: 5, [6], [7], 8, [9], [10], [11], [12], 14; AU: 17, 18. Depth: 0–3 m. Marine species.

Abudefduf vaigiensis (Quoy & Gaimard, 1825) – Demoiselle à cinq bandes. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 62) and Kulbicki & Williams (1997: 17); also reported as *Abudefduf saxatilis* by Allen (1975: 230). – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17, 18; NZ: 23. Depth: 0–15 m. Marine species.

Abudefduf whitleyi Allen & Robertson, 1974. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC material. – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, 11, [12]; AU: 17, 18. Depth: 1–5 m. Marine species.

Acanthochromis polyacanthus (Bleeker, 1855). – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 244). The record of this species needs additional verification and the collection of specimens. – Distribution: NC: [5], [6], 7, 8, [9], [10]. Depth: 1–65 m. Marine species.

Amblyglyphidodon aureus (Cuvier [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1830) – Demoiselle jaune immaculé. – Taxonomy: First record from New Caledonia by Allen (1975: 230). SMNS material. – Distribution: NC: [1], 5, 6, [7], 8, [9], 10, 14. Depth: 3–45 m. Marine species.

Amblyglyphidodon curacao (Bloch, 1787). – Taxonomy: First record from New Caledonia by Fourmanoir (1981: 27). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12]. Depth: 0–40 m. Marine species.

Amblyglyphidodon orbicularis (Hombron & Jacquinot in Jacquinot & Guichenot, 1853) – Demoiselle à ventre jaune. – Taxonomy: First record from New Caledonia by Allen & Randall (2002c: 152); previously reported as *Abudefduf leucogaster* (non Bleeker, 1847) by Borodin (1932: 92), and as '*Amblyglyphidodon* sp.' by Laboute & Grandperrin (2000: 318). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 0–30 m. Marine species.

Amblyglyphidodon ternatensis (Bleeker, 1853). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 62). IRDNC material. – Distribution: NC: 6, [7], 8, [9], [10]. Depth: 1–30 m. Marine species.

Amphiprion akindynos Allen, 1972 – Amphiprion du récif. – Taxonomy: Recorded from New Caledonia by Allen (1972: 153); previously reported as *Amphiprion sebae* (non Bleeker, 1853) by Whitley (1961: 64); brown variety reported as *Amphiprion tricinctus* (non Schultz & Welander in Schultz, 1953) by Fourmanoir & Laboute (1976: 248) (G. R. Allen, personal communication, May 2010). AMS, IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–25 m. Marine species.

Amphiprion chrysopterus Cuvier in Cuvier & Valenciennes, 1830. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 339). SMNS material. – Distribution: NC: [5], 6, 7, 8, 14. Depth: 1–30 m. Marine species.

Amphiprion clarkii (Bennett, 1830) – Amphiprion de Clark. – Taxonomy: First record from New Caledonia by Allen (1972: 117); previously reported as *Amphiprion bicinctus* (non Rüppell, 1830) by Whitley (1961: 64). AMS, IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–60 m. Marine species.

Amphiprion melanopus Bleeker, 1852 – Amphiprion à tâche noire. – Taxonomy: First record from New Caledonia by Allen (1972: 92); previously reported as *Amphiprion ephippium* (non Rüppell, 1830) by Whitley (1961: 64). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–18 m. Marine species.

Amphiprion perideraion Bleeker, 1855 – Amphiprion rose. – Taxonomy: First record from New Caledonia by Whitley (1961: 64). AMS, IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], 12, 14. Depth: 1–38 m. Transitional water and marine.

Cheiloprion labiatus (Day, 1877) – Demoiselle à grosses lèvres. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 63) and Evans (2006: 102). IRDNC material. – Distribution: NC: 5, 6, 7, 8, 9, 10. Depth: 0–3 m. Marine species.

Chromis acares Randall & Swerdloff, 1973. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 18). IRDNC and USNM material. – Distribution: NC: [5], 6, 7, 8, [9], 14. Depth: 2–37 m. Marine species.

Chromis agilis Smith, 1960 – Chromis de récif, chromis agile. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 63) and Kulbicki et al. (1994: 26). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 14; AU: 17. Depth: 1–65 m. Marine species.

Chromis alpha Randall, 1988. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 63) and Myers (1999: 177); also reported as '*Chromis* sp. A' by Allen (1975: 230). – Distribution: NC: [6], 7, 8, [9], [10], 14. Depth: 12–95 m. Marine species.

Chromis amboinensis (Bleeker, 1871). – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 14. Depth: 5–70 m. Marine species.

Chromis analis (Cuvier in Cuvier & Valenciennes, 1830). – Taxonomy: First record from New Caledonia by Allen (1975: 230). SMNS material. – Distribution: NC: [1], [6], [7], 8, [9], [10], 14. Depth: 10–144 m. Marine species.

Chromis atripectoralis Welander & Schultz, 1951. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17. Depth: 0–29 m. Marine species.

Chromis atripes Fowler & Bean, 1928 – Chromis à nageoires foncées. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 14. Depth: 2–40 m. Marine species.

Chromis caudalis Randall, 1988. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 339). – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 15–55 m. Marine species.

Chromis chrysura (Bliss, 1883) – Chromis corpulent. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 3–45 m. Marine species.

Chromis flavomaculata Kamohara, 1960 – Chromis à épaule noire. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 63) and Kulbicki et al. (1994: 26); previously described as *Chromis kennensis* by Whitley (1964: 182) and reported by Allen (1975: 230). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17, 18; NZ: 23. Depth: 5–40 m. Marine species.

Chromis fumea (Tanaka, 1917). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 63) and Kulbicki & Wantiez (1990: 125); previously described as *Chromis* sp. by Fourmanoir & Laboute (1976: 246); also reported as *Chromis nitida* (non Whitley, 1928) by Laboute & Grandperrin (2000: 319). IRDNC material. – Distribution: NC: 1, 5, [6], 7, 8, 9, [10], 11, 12, 14; AU: [17], 18; NZ: 23. Depth: 3–72 m. Marine species.

Chromis hypsilepis (Günther, 1867). – Taxonomy: **New record** from New Caledonia; previously reported as *Chromis notata* (non Temminck & Schlegel, 1843) by Laboute & Grandperrin (2000: 319). – Distribution: NC: [6], [7], 8, [9], [10], 14, 17, 18. Depth: 2–46 m. Marine species.

Chromis iomelas Jordan & Seale, 1906 – Chromis moitié-moitié. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14. Depth: 3–25 m. Marine species.

Chromis lepidolepis Bleeker, 1877 – Chromis à nombreuses écailles. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 14. Depth: 2–43 m. Marine species.

Chromis leucura Gilbert, 1905 – Chromis à queue blanche. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 63) and Kulbicki et al. (1994: 27). – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 20–119 m. Marine species.

Chromis margaritifer Fowler, 1946 – Chromis bicolore. – Taxonomy: First record from New Caledonia by Allen (1975: 230); subsequently reported as *Chromis flavipectoralis* (non Randall, 1988) by Evans (2006: 102). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17. Depth: 2–20 m. Marine species.

Chromis mirationis Tanaka, 1917. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 63) and Kulbicki et al. (1994: 27). IRDNC material. – Distribution: NC: 1. Depth: 40–208 m. Marine species.

Chromis nitida (Whitley, 1928). – Taxonomy: First record from New Caledonia by Randall (2005a: 359). – Distribution: NC: [6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 5–25 m. Marine species.

Chromis retrofasciata Weber, 1913 – Chromis à bande noire. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, [7], 8, [9], 10, 11, [12], 14. Depth: 12–120 m. Marine species.

Chromis ternatensis (Bleeker, 1856). – Taxonomy: First record from New Caledonia by Allen (1975: 230); previously reported as *Chromis caeruleus* by Plessis & Fourmanoir (1966c: 133). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 1–36 m. Marine species.

Chromis vanderbilti (Fowler, 1941) – Chromis rayé. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17, 18; NZ: 20, 23. Depth: 2–20 m. Marine species.

Chromis viridis (Cuvier [ex Ehrenberg] in Cuvier & Valenciennes, 1830) – Chromis bleu-vert. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 63), Rivaton & Richer de Forges (1990: 32), and Kulbicki et al. (1994: 27); previously reported as *Chromis caerulea* (non Cuvier in Cuvier in Valenciennes, 1830) by Allen (1975: 230). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–20 m. Marine species.

Chromis weberi Fowler & Bean, 1928. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 14. Depth: 3–40 m. Marine species.

Chromis xanthochira (Bleeker, 1851). – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 18). USNM material. – Distribution: NC: 5, [6], 7, 8, 9, [10], 14. Depth: 10–48 m. Marine species.

Chromis xanthura (Bleeker, 1854). – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 14. Depth: 3–40 m. Marine species.

Chrysiptera biocellata (Quoy & Gaimard, 1825) – Demoiselle à deux ocelles. – Taxonomy: First record from New Caledonia as *Glyphidodontops biocellatus* by Allen (1975: 230); previously reported as *Abudefduf zonatus* by Plessis & Fourmanoir (1966c: 134). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 0–5 m. Marine species.

Chrysiptera brownriggii (Bennett, 1828). – Taxonomy: First record from New Caledonia by Myers (1999: 181); previously reported as *Pomacentrus albofasciatus* by Plessis & Fourmanoir (1966c: 134), and as *Glyphidodontops leucopomus* by Allen (1975: 230). IRDNC, SMNS and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, [10], 14. Depth: 0–12 m. Marine species.

Chrysiptera cyanea (Quoy & Gaimard, 1825) – Étincelle. – Taxonomy: First record from New Caledonia as *Glyphidodontops cyaneus* by Allen (1975: 230); previously reported as *Iredaleichthys uniocellatus* by Whitley (1961: 64). AMS, IRDNC and USNM material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Chrysiptera flavipinnis (Allen & Robertson, 1974). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 63) and Kulbicki et al. (1994: 27). – Distribution: NC: 1. Depth: 3–38 m. Marine species.

Chrysiptera glauca (Cuvier in Cuvier & Valenciennes, 1830). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 63) and Kulbicki et al. (1994: 27). IRDNC material. – Distribution: NC: 1, 8; AU: 17, 18. Depth: 0–3 m. Transitional water and marine.

Chrysiptera notialis (Allen, 1975). – Taxonomy: First record from New Caledonia as *Glyphidodontops notialis* by Allen et al. (1976: 413). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18. Depth: 7–45 m. Marine species.

Chrysiptera rex (Snyder, 1909) – Reine demoiselle. – Taxonomy: First record from New Caledonia as *Glyphidodontops rex* by Allen (1975: 230). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 1–20 m. Marine species.

Chrysiptera rollandi (Whitley, 1961) – Demoiselle tricolore. – Taxonomy: Originally described from New Caledonia as *Chromis rollandi* by Whitley (1961: 60–61). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–35 m. Marine species.

Chrysiptera starcki (Allen, 1973) – Demoiselle bleu à dos jaune. – Taxonomy: First record from New Caledonia as *Glyphidodontops starcki* by Allen (1975: 230). IRDNC and USNM material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], 14. Depth: 20–60 m. Marine species.

Chrysiptera talboti (Allen, 1975). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 340). SMNS material. – Distribution: NC: 14. Depth: 2–35 m. Marine species.

Chrysiptera taupou (Jordan & Seale, 1906). – Taxonomy: First record from New Caledonia as *Abudefduf taupou* by Plessis & Fourmanoir (1966c: 134). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–10 m. Marine species.

Chrysiptera tricincta (Allen & Randall, 1974) – Demoiselle à trois bandes. – Taxonomy: First record from New Caledonia as *Glyphidodontops tricinctus* by Allen (1975: 230). – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 10–90 m. Marine species.

Dascyllus aruanus (Linnaeus, 1758) – Dascyllus noir et blanc. – Taxonomy: First record from New Caledonia as *Tetradrachmum aruanum* by Whitley (1961: 65). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–20 m. Marine species.

Dascyllus flavicaudus Randall & Allen, 1977. – Taxonomy: First record from New Caledonia (Grand Récif Sud) by Fricke & Kulbicki (2006: 340). G. R. Allen (personal communication, May 2010) suggests that the New Caledonian record might be based on a variety of *D. trimaculatus*. SMNS material. – Distribution: NC: 8, 11, [12]. Depth: 2–40 m. Marine species.

Dascyllus melanurus Bleeker, 1854. – Taxonomy: First record from New Caledonia as *Tetradrachmum melanurum* by Whitley (1961: 65). IRDNC material. – Distribution: NC: 1, 6, [7], 8, [9], [10], 14. Depth: 1–68 m. Marine species.

Dascyllus reticulatus (Richardson, 1846) – Dascyllus réticulé. – Taxonomy: First record from New Caledonia by Allen (1975: 230); previously reported as *Pellochromis marginatus* (non Rüppell, 1829) by Whitley (1961: 65). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–50 m. Marine species.

Dascyllus trimaculatus (Rüppell, 1829) – Dascyllus à tâches blanches. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17. Depth: 0–55 m. Marine species.

Dischistodus fasciatus (Cuvier in Cuvier & Valenciennes, 1830). – Taxonomy: First record from New Caledonia (Grand Récif Sud) by Fricke & Kulbicki (2006: 340). SMNS material. – Distribution: NC: [6], [7], [8], 9, [10], 11. Depth: 1–8 m. Marine species.

Dischistodus melanotus (Bleeker, 1857). – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by Evans (2006: 103). Also a visual record from Lifou (Loyalty Islands), based on three specimens observed by M. Kulbicki in 1997. – Distribution: NC: [6], 7, [8], [9], [10], 14. Depth: 1–10 m. Marine species.

Dischistodus prosopotaenia (Bleeker, 1852). – Taxonomy: First record from New Caledonia (Grand Récif Sud) by Fricke & Kulbicki (2006: 340); previously reported as *Chrysiptera* sp. by Rivaton & Bourret (1999: 142). SMNS material. – Distribution: NC: [6], [7], 8, [9], 10. Depth: 1–12 m. Transitional water and marine.

Hemiglyphidodon plagiometopon (Bleeker, 1852). – Taxonomy: First record from New Caledonia by Quenouille et al. (2004: 70). IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, [10], 14. Depth: 1–10 m. Marine species.

Lepidozygus tapeinosoma (Bleeker, 1856) – Poisson demoiselle bleu à dos jaune. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC and USNM material. – Distribution: NC: 1, [6], 7, 8, [9], [10], 14. Depth: 1–30 m. Marine species.

Neoglyphidodon carlsoni (Allen, 1975). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 18). USNM material. – Distribution: NC: [5], 6, 7, 8, [9], 14. Depth: 1–5 m. Marine species.

Neoglyphidodon melas (Cuvier [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1830). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 64) and Kulbicki et al. (1994: 27). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10. Depth: 1–12 m. Marine species.

Neoglyphidodon nigroris (Cuvier in Cuvier & Valenciennes, 1830). – Taxonomy: First record from New Caledonia as *Paraglyphidodon nigroris* by Fourmanoir & Laboute (1976: 242). IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 2–23 m. Marine species.

Neoglyphidodon polyacanthus (Ogilby, 1889) – Demoiselle à nombreuses épines, chromis à nombreuses épines, chromis moucheté. – Taxonomy: First record from New Caledonia as *Glyphisodon polyacanthus* by Whitley (1961: 64). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10, [11], 12; AU: 17, 18. Depth: 2–30 m. Marine species.

Neopomacentrus azysron (Bleeker, 1877) – Demoiselle à queue jaune. – Taxonomy: First record from New Caledonia by Thollot & Kulbicki (1988: 618). BPBM, IRDNC, SMNS and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 1–12 m. Marine species.

Neopomacentrus bankieri (Richardson, 1846). – Taxonomy: First record from New Caledonia (Grande Terre) by Evans (2006: 103) and Fricke & Kulbicki (2006: 340). SMNS material. – Distribution: NC: [6], 7, [8], [9], 10. Depth: 2–12 m. Marine species.

Neopomacentrus cyanomos (Bleeker, 1856). – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 242). USNM material. – Distribution: NC: [6], 7, 8, [9], 10, 14. Depth: 2–30 m. Marine species.

Neopomacentrus filamentosus (Macleay, 1882). – Taxonomy: First record from New Caledonia by Randall (2005a: 373); previously reported as *Parapomacentrus bankieri* (non Richardson, 1846) by Whitley (1961: 65), and as *Neopomacentrus anabatoides* by Allen (1975: 230). AMS and SMNS material. – Distribution: NC: [6], 7, 8, 9, 10. Depth: 2–12 m. Marine species.

Neopomacentrus nemurus (Bleeker, 1857). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 323); also reported as *Neopomacentrus* sp. by Allen (1975: 230). IRDNC, SMNS and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 14. Depth: 1–10 m. Marine species.

Neopomacentrus taeniurus (Bleeker, 1856). – Taxonomy: First record from New Caledonia by Thollot & Kulbicki (1988: 615, 618). IRDNC and SMNS material. – Distribution: NC: 6, [7], 8, [9], 10. Depth: 0–3 m. Freshwater, transitional water and marine.

Neopomacentrus violascens (Bleeker, 1848). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 64), Rivaton & Richer de Forges (1990: 33), and Kulbicki & Williams (1997: 18). IRDNC and USNM material. – Distribution: NC: 5, [6], 7, 8, [9], 10, 14. Depth: 1–30 m. Marine species.

Parma polylepis Günther, 1862. – Taxonomy: First record from New Caledonia by Allen (1975: 230); subsequently reported as *Parma oligolepis* (non Whitley, 1929) by Quenouille et al. (2004: 71). IRDNC and SMNS material. – Distribution: NC: [6], 7, 8, [9], [10], [11], 12; AU: 17, 18; NZ: 23. Depth: 1–40 m. Marine species.

Plectroglyphidodon dickii (Liénard, 1839) – Poisson demoiselle à écharpe noire. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17, 18. Depth: 0–15 m. Marine species.

Plectroglyphidodon imparipennis (Vaillant in Vaillant & Sauvage, 1875). – Taxonomy: First record from New Caledonia by Allen (1975: 230). SMNS material. – Distribution: NC: 5, [6], 7, 8, [9], [10], 14. Depth: 0–15 m. Marine species.

Plectroglyphidodon johnstonianus Fowler & Ball, 1924. – Taxonomy: First record from New Caledonia by Allen (1975: 230). SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17, 18. Depth: 0–18 m. Marine species.

Plectroglyphidodon lacrymatus (Quoy & Gaimard, 1825) – Demoiselle ponctuée. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17. Depth: 1–40 m. Marine species.

Plectroglyphidodon leucozonus (Bleeker, 1859) – Demoiselle à bande blanche. – Taxonomy: First record from New Caledonia by Allen (1975: 230). IRDNC and USNM material. – Distribution: NC: [1], 5, 6, 7, 8, [9], [10], 11, [12], 14; AU: 17. Depth: 0–6 m. Marine species.

Pomacentrus adelus Allen, 1991. – Taxonomy: First record from New Caledonia by Allen (1975: 222). IRDNC and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 1–8 m. Marine species.

Pomacentrus amboinensis Bleeker, 1868 – Demoiselle pâle. – Taxonomy: First record from New Caledonia by Allen (1975: 231). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 1–40 m. Marine species.

Pomacentrus aurifrons Allen, 2004. – Taxonomy: First record from New Caledonia by Randall (2005a: 377); previously reported as *Pomacentrus smithi* (non Fowler & Bean, 1928) by Rivaton et al. (1990: 64) and Grimaud & Kulbicki (1998: 928). IRDNC material. – Distribution: NC: 5, 6, 7, 8, 9, 10. Depth: 2–14 m. Marine species.

Pomacentrus bankanensis Bleeker, 1853 – Demoiselle mouchetée. – Taxonomy: First record from New Caledonia by Allen (1975: 231). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 0–32 m. Marine species.

Pomacentrus brachialis Cuvier in Cuvier & Valenciennes, 1830 – Demoiselle à épaule noire. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 64) and Kulbicki & Williams (1997: 18); previously reported as *Pomacentrus melanopterus* by Allen (1975: 231). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 3–40 m. Marine species.

Pomacentrus burroughi Fowler, 1918. – Taxonomy: **New record** from New Caledonia (Nouméa, Province Sud, Grande Terre), based on USNM 324095 (3 specimens). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–16 m. Marine species.

Pomacentrus chrysurus Cuvier [ex Broussonet] in Cuvier & Valenciennes, 1830. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 18); previously reported as *Pomacentrus flavicauda* by Allen (1975: 231), and as *Pomacentrus rhodonotus* by Rivaton et al. (1990: 64). IRDNC and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 0–5 m. Marine species.

Pomacentrus coelestis Jordan & Starks, 1901 – Demoiselle bleue et rouge. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 18); previously reported as *Abudefduf uniocellatus* (non Quoy & Gaimard, 1825) by Rivaton et al. (1990: 64). IRDNC and USNM material. – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–20 m. Marine species.

Pomacentrus grammorhynchus Fowler, 1918. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 325). SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, [10], 11, [12], 14. Depth: 1–12 m. Marine species.

Pomacentrus imitator (Whitley, 1964). – Taxonomy: First record from New Caledonia by Allen (1991: 147). IRDNC and SMNS material. – Distribution: NC: 6, 7, 8, 9, 10, 14. Depth: 1–15 m. Marine species.

Pomacentrus lepidogenys Fowler & Bean, 1928 – Demoiselle à nombreuses écailles. – Taxonomy: First record from New Caledonia by Allen (1975: 231). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 1–12 m. Marine species.

Pomacentrus moluccensis Bleeker, 1853 – Demoiselle jaune et lilas. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 246); previously reported as *Pseudopomacentrus sufflavus* by Whitley (1961: 65), and as *Pomacentrus popei* by Allen (1975: 231). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–14 m. Marine species.

Pomacentrus nagasakiensis Tanaka, 1917. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 18); previously reported as *Pomacentrus Wardi* (non Whitley, 1927) by Fourmanoir (1981: 27), and described as *Pomacentrus arenarius* by Allen (1987b); subsequently reported as *Pomacentrus* sp. by Laboute & Grandperrin (2000: 327). – Distribution: NC: 5, 6, 7, 8, [9], 10, 14. Depth: 3–35 m. Marine species.

Pomacentrus nigromanus Weber, 1913. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 341). IRDNC and SMNS material. – Distribution: NC: 8, 14. Depth: 6–60 m. Marine species.

Pomacentrus pavo (Bloch, 1787) – Demoiselle à couleur saphir. – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS, IRDNC, SMNS and USNM

material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17, 18. Depth: 1–16 m. Marine species.

Pomacentrus philippinus Evermann & Seale, 1907 – Demoiselle des Philippines. – Taxonomy: First record from New Caledonia by Allen (1975: 231). IRDNC and USNM material. – Distribution: NC: 1, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 1–12 m. Marine species.

Pomacentrus reidi Fowler & Bean, 1928. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 326); previously reported as *Pomacentrus ovoides* by Borodin (1932: 92). – Distribution: NC: [1], [6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 3–70 m. Marine species.

Pomacentrus simsiang Bleeker, 1856. – Taxonomy: First record from New Caledonia by Fourmanoir (1981: 27). IRDNC and SMNS material. – Distribution: NC: [5], 6, 7, 8, [9], 10. Depth: 0–10 m. Marine species.

Pomacentrus spilotoceps Randall, 2002. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 341). SMNS material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 0–5 m. Marine species.

Pomacentrus taeniometopon Bleeker, 1852 – Demoiselle foncée. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990 64) and Rossier & Kulbicki (2000: 21). IRDNC material. This record needs additional verification. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–8 m. Transitional water and marine.

Pomacentrus tripunctatus Cuvier in Cuvier & Valenciennes, 1830 – Demoiselle à trois points. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 134). SMNS material. – Distribution: NC: [6], [7], 8, 9, 10, 14. Depth: 0–3 m. Transitional water and marine.

Pomacentrus vaiuli Jordan & Seale, 1906 – Demoiselle à points bleus. – Taxonomy: First record from New Caledonia by Allen (1975: 231). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 1–45 m. Marine species.

Pomachromis richardsoni (Snyder, 1909). – Taxonomy: First record from New Caledonia by Allen (1975: 231). – Distribution: NC: 1, 5, [6], [7], 8, [9], 14. Depth: 2–25 m. Marine species.

Pristotis obtusirostris (Günther, 1862). – Taxonomy: First record from New Caledonia as *Texeirichthys obtusirostris* by Rivaton et al. (1990: 65) and as *Pristotis obtusirostris* by Randall (2005a: 383); previously reported as *Pristotis jerdoni* by Rivaton (1989: 144–145). IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], 10. Depth: 2–80 m. Marine species.

Stegastes albifasciatus (Schlegel & Müller, 1839). – Taxonomy: First record from New Caledonia as *Eupomacentrus albifasciatus* by Allen (1975: 230); previously reported as *Pomacentrus eclipticus* by Plessis & Fourmanoir (1966c: 134). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 14. Depth: 0–4 m. Marine species.

Stegastes apicalis (De Vis, 1885). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 341). – Distribution: NC: 7, 8, 9, 14. Depth: 0–5 m. Marine species.

Stegastes aureus (Fowler, 1927). – Taxonomy: First record from New Caledonia by Allen (1991: 169). SMNS material. – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 0–5 m. Marine species.

Stegastes fasciolatus (Ogilby, 1889). – Taxonomy: First record from New Caledonia as *Eupomacentrus fasciolatus* by Allen (1975: 230). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17, 18; NZ: 20. Depth: 0–30 m. Marine species.

Stegastes gascoynei (Whitley, 1964). – Taxonomy: First record from New Caledonia as *Eupomacentrus gascoynei* by Allen (1975: 230). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17, 18; NZ: 23. Depth: 0–30 m. Marine species.

Stegastes nigricans (Lacepède [ex Commerson], 1802). – Taxonomy: First record from New Caledonia as *Pomacentrus nigricans* by Borodin (1932: 92); subsequently reported as *Eupomacentrus subniger* by Whitley (1961: 64). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–12 m. Marine species.

Stegastes punctatus (Quoy & Gaimard, 1825). – Taxonomy: First record from New Caledonia by Randall (2005a: 386); previously reported as *Eupomacentrus lividus* (non Forster in Bloch & Schneider, 1801) by Allen (1975: 231). IRDNC, SMNS and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–5 m. Marine species.

Labridae

Anampses caeruleopunctatus Rüppell, 1829. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 45) and Kulbicki & Williams (1997: 19). – Distribution: NC: [1], 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17, [18]; NZ: 20. Depth: 3–30 m. Marine species.

Anampses femininus Randall, 1972 – Girelle féminine. – Taxonomy: Reported from New Caledonia in original description by Randall (1972: 176–180). AMS, IRDNC and BPBM material. – Distribution: NC: 1, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17. Depth: 10–30 m. Marine species.

Anampses geographicus Valenciennes in Cuvier & Valenciennes, 1840. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 45) and Kulbicki et al. (1994: 28). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 0–20 m. Marine species.

Anampses melanurus Bleeker, 1857. – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by Evans (2006: 105). – Distribution: NC: [6], 7, [8], [9], [10]. Depth: 15–40 m. Marine species.

Anampses meleagrides Valenciennes in Cuvier & Valenciennes, 1839. – Taxonomy: First record from New Caledonia by Evans (2006: 105). Also recorded by visual census from Lifou, Loyalty Islands by M. Kulbicki in 1997. – Distribution: NC: 6, 7, 8, [9], [10], 14. Depth: 3–60 m. Marine species.

Anampses neoguinaicus Bleeker, 1878. – Taxonomy: First record from New Caledonia by Randall (1972: 180–182). AMS, BPBM, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 4–25 m. Marine species.

Anampses twistii Bleeker, 1856. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 45) and Kulbicki et al. (1994: 28). – Distribution: NC: 1, 6, 7, 8, [9], 10, 14. Depth: 5–30 m. Marine species.

Bodianus anthioides (Bennett, 1832) – Caudène. – Taxonomy: First record from New Caledonia by Fourmanoir &

LABOUTE (1976: 113). – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 6–60 m. Marine species.

Bodianus axillaris (Bennett, 1832) – Vieille partagée. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 114). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 2–80 m. Marine species.

Bodianus bilunulatus (Lacepède, 1801) – Vieille à selle noire. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 114); subsequently reported as *Bodianus busellatus* (non Gomon, 2006) by FRICKE & KULBICKI (2006: 341). – Distribution: NC: [6], [7], 8, [9], [10], [11], [12], 14, 15, 16. Depth: 12–86 m. Marine species.

Bodianus bimaculatus Allen, 1973. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 45), RIVATON & RICHER DE FORGES (1990: 29), and GOMON (2006: 24–26). MNHN material. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: [17], [18]; NZ: 23. Depth: 30–60 m. Marine species.

Bodianus cylindriatus (Tanaka, 1930). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by RIVATON (1989: 152). MNHN material. – Distribution: NC: 1. Depth: 250–370 m. Marine species.

Bodianus dictynna Gomon, 2006. – Taxonomy: Recorded from New Caledonia in original description by GOMON (2006: 59–62); previously reported as *Bodianus diana* by FOURMANOIR & LABOUTE (1976: 114), as *Bodianus* sp. 4 by PARENTI & RANDALL (2000: 7), and as *Bodianus* sp. by RANDALL (2005a: 393). – Distribution: NC: 5, 6, 7, 8, [9], [10], 11, [12], 14. Depth: 9–37 m. Marine species.

Bodianus flavifrons Gomon, 2001. – Taxonomy: Originally described from New Caledonia by GOMON (2001: 411–412). MNHN and NMV material. – Distribution: NC: 2, 12; AU: 17; NZ: 20. Depth: 114–340 m. Marine species.

Bodianus izuensis Araga & Yoshino in Masuda, Araga & Yoshino, 1975. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 45), RIVATON & BOURRET (1999: 152), and PARENTI & RANDALL (2000: 5). MNHN material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 30–35 m. Marine species.

Bodianus loxozonus (Snyder, 1908) – Vieille barrée. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 115); previously reported as *Lepidaplois hirsutus* (non Lacepéde, 1801) by WHITLEY (1961: 64). AMS, BPBM and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 3–40 m. Marine species.

Bodianus masudai Araga & Yoshino in Masuda, Araga & Yoshino, 1975. – Taxonomy: First record from New Caledonia (Grande Terre) by RIVATON et al. (1990: 45), RIVATON & BOURRET (1999: 152), and PARENTI & RANDALL (2000: 6). IRDNC material. – Distribution: NC: [6], 7, 8, [9], [10], [11], [12]; AU: 18. Depth: 30–113 m. Marine species.

Bodianus mesothorax (Bloch & Schneider, 1801). – Taxonomy: First record from New Caledonia (Grande Terre) by GOMON (2006: 67–69). USNM material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–20 m. Marine species.

Bodianus paraleucosticticus Gomon, 2006. – Taxonomy: Originally described from New Caledonia by GOMON (2006: 52–53); previously reported as *Bodianus* sp. by RIVATON et al. (1990: 45) and KULBICKI et al. (1994: 28). BPBM material (holotype). – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 50–310 m. Marine species.

Bodianus perditio (Quoy & Gaimard, 1834) – Perroquet banane, labre de la perdition. – Taxonomy: First record from New Caledonia as *Lepidaplois perditio* by MCCULLOCH & WHITLEY (1925: 169). MNHN and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, 12, 14; AU: 17, 18. Depth: 9–25 m. Marine species.

Bodianus unimaculatus (Günther, 1862). – Taxonomy: **New record** from New Caledonia; previously reported as *Bodianus oxycephalus* (non Bleeker, 1862) by RIVATON et al. (1990: 45). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18; NZ: 19, 20, 23. Depth: 6–60 m. Marine species.

Cheilinus chlorourus (Bloch, 1791) – Vieille tâchetée. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 116). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–30 m. Marine species.

Cheilinus fasciatus (Bloch, 1791) – Vieille rayée. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 117). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 3–60 m. Marine species.

Cheilinus oxycephalus Bleeker, 1853. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 45) and KULBICKI et al. (1994: 28). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14. Depth: 1–40 m. Marine species.

Cheilinus trilobatus Lacepède [ex Commerson], 1801 – Vieille triple queue, la chaux. – Taxonomy: First record from New Caledonia by PLESSIS & FOURMANOIR (1966c: 135). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–30 m. Marine species.

Cheilinus undulatus Rüppell, 1835 – Napoléon. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 118). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17. Depth: 1–60 m. Marine species.

Cheilio inermis (Forsskål in Niebuhr, 1775) – Longue girelle, banane. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 121). AMS and IRDNC material. – Distribution: NC: 1, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17, 18. Depth: 1–30 m. Marine species.

Choerodon anchorago (Bloch, 1791) – Poisson défense à tâches oranges. – Taxonomy: First record from New Caledonia by BORODIN (1932: 94). – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 3–25 m. Marine species.

Choerodon fasciatus (Günther, 1867) – Poisson arlequin. – Taxonomy: First record from New Caledonia as *Lienardella fasciata* by WHITLEY (1961: 61–62, 64). AMS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 4–35 m. Marine species.

Choerodon gomoni Allen & Randall, 2002. – Taxonomy: Recorded from New Caledonia (Chesterfield Islands) in original description by ALLEN & RANDALL (2002a: 110); previously reported as '*Choerodon* sp. pink' by KULBICKI et al. (1994: 29). BPBM and USNM material. – Distribution: NC: 1. Depth: 82 m. Marine species.

Choerodon graphicus (De Vis, 1885) – Poisson défense des sargasses. – Taxonomy: First record from New Caledonia by KULBICKI (1988a: 90); previously reported as *Choerops*

oligocanthus (non Bleeker, 1851) by Borodin (1932: 94), and as *Choerodon transversalis* by Whitley (1961: 62, 64). AMS, IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], 10, 11, 12. Depth: 15–40 m. Marine species.

Choerodon jordani (Snyder, 1908) – Poisson défense à tâches noires. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 29); previously reported as *Choerodon melanostigma* (non Fowler & Bean, 1928) by Fourmanoir & Laboute (1976: 119). – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], 11, [12], 14. Depth: 15–60 m. Marine species.

Choerodon margaritiferus Fowler & Bean, 1928. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 46) and Kulbicki et al. (1994: 29). – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 72 m. Marine species.

Cirrhilabrus sp. – Taxonomy: Reported from New Caledonia (northeastern Grande Terre) as *Cirrhilabrus exquisitus* (non Smith, 1957) by Evans (2006: 106). – Distribution: NC: 5, [6], 7, [8], [9], [10]. Depth: 6–40 m. Marine species.

Cirrhilabrus bathyphilus Randall & Nagareda, 2002. – Taxonomy: Recorded from New Caledonia (Chesterfield Islands) in original description by Randall & Nagareda (2002); previously reported as *Cirrhilabrus* sp. by Rivaton et al. (1990: 46) and Kulbicki et al. (1994: 29). BPBM, MNHN and USNM material. – Distribution: NC: 1. Depth: 6–40 m. Marine species.

Cirrhilabrus laboutei Randall & Lubbock, 1982. – Taxonomy: Originally described from New Caledonia by Randall & Lubbock (1982: 2–6); previously reported as *Cirrhilabrus* sp. by Fourmanoir & Laboute (1976: 121). BMNH, BPBM, CAS, MNHN, USNM and WAM material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 7–55 m. Marine species.

Cirrhilabrus lineatus Randall & Lubbock, 1982. – Taxonomy: Originally described from New Caledonia by Randall & Lubbock (1982: 6–9); subsequently reported as '*Cirrhilabrus* sp. B' by Rivaton & Bourret (1999: 156). BMNH, CAS, MNHN, USNM and WAM material. – Distribution: NC: 1, [6], [7], 8, [9], [10], 14. Depth: 1–55 m. Marine species.

Cirrhilabrus punctatus Randall & Kuiter, 1989. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 29). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 2–78 m. Marine species.

Cirrhilabrus roseafascia Randall & Lubbock, 1982. – Taxonomy: Originally described from New Caledonia (Grande Terre) by Randall & Lubbock (1982: 9–11). BPBM material (holotype). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 100 m. Marine species.

Coris aygula Lacepède, 1801 – Coris clown. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 46) and Kulbicki et al. (1994: 29); previously reported as *Coris cingulum* and *C. angulata* by Whitley (1961: 64), and as *Coris variegatus* (non Rüppell, 1835) by Fourmanoir (1981: 27). AMS and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–30 m. Marine species.

Coris batuensis (Bleeker, 1856–1857). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 29); previously reported as *Coris schroederi* (non Bleeker, 1858) by Rivaton et al. (1990: 46). BMNH material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 14. Depth: 1–15 m. Marine species.

Coris dorsomacula Fowler, 1908. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 29); subsequently reported as *Coris multicolor* (non Rüppell, 1835) by Rivaton & Bourret (1999: 158). BPBM and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 2–40 m. Marine species.

Coris gaimard (Quoy & Gaimard, 1824) – Coris à points bleus. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 124). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–50 m. Marine species.

Coris picta (Bloch & Schneider, 1801). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 46) and Kulbicki et al. (1994: 29). – Distribution: NC: 1, 8, 14; AU: 17, 18; NZ: 20, 23. Depth: 3–25 m. Marine species.

Coris pictoides Randall & Kuiter, 1982. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 19). – Distribution: NC: 14. Depth: 9–33 m. Marine species.

Coris sandageri (Hector, 1884). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 342) as *Coris sandeyeri*; previously reported as *Guntheria trimaculata* by Whitley (1961: 64). We here use the prevailing spelling of the species name, *sandageri*. AMS material. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18; NZ: 20, 21, 23. Depth: 2–60 m. Marine species.

Cymolutes praetextatus (Quoy & Gaimard, 1834). – Taxonomy: First record from New Caledonia by Randall (2005a: 408); previously reported as *Cymolutes lecluse* (non Quoy & Gaimard, 1824) by Whitley (1961: 64), and as *Cymolutes* sp. by Rivaton et al. (1990: 46). AMS and IRDNC material. – Distribution: NC: 1, [6], 7, 8, [9], [10], [11], [12]; AU: [17], 18. Depth: 1–6 m. Marine species.

Cymolutes torquatus (Valenciennes in Cuvier & Valenciennes, 1840). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 357). – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 1–20 m. Marine species.

Diproctacanthus xanthurus (Bleeker, 1856). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 342). AMS material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 2–20 m. Marine species.

Epibulus insidiator (Pallas, 1770) – Epibule trompeur. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 120). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 1–42 m. Marine species.

Gomphosus varius Lacepède, 1801 – Poisson oiseau. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 124); previously described as *Thalassoma stuckiae* by Whitley (1959: 19). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–15 m. Marine species.

Halichoeres annularis (Valenciennes [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1839). – Taxonomy: First record from New Caledonia as *Halichoeres lamarii anularis* by Fricke & Kulbicki (2006: 342); previously reported as *Halichoeres marginatus* (non Rüppell, 1835) by Rivaton et

al. (1990: 46) and KULBICKI et al. (1994: 29). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 0–20 m. Marine species.

Halichoeres argus (Bloch & Schneider, 1801) – Girelle paon. – Taxonomy: First record from New Caledonia by FOURMANOIR (1981: 27); previously reported as *Halicoeres leparensis* by BORODIN (1932: 94). IRDNC and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 14. Depth: 0–15 m. Marine species.

Halichoeres biocellatus Schultz in Schultz, Chapman, Lachner & Woods, 1960. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 46) and KULBICKI et al. (1994: 29). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 14. Depth: 1–35 m. Marine species.

Halichoeres chloropterus (Bloch, 1791). – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 358). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Halichoeres chrysus Randall, 1981. – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 19). IRDNC, SMNS and USNM material. – Distribution: NC: 5, [6], 7, 8, 9, [10], 14. Depth: 2–60 m. Marine species.

Halichoeres claudia Randall & Rocha, 2009. – Taxonomy: **New record** from New Caledonia; previously reported as *Halichoeres ornatissimus* (non Garrett, 1863) by LABOUTE & GRANDPERRIN (2000: 360). – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, 14. Depth: 4–15 m. Marine species.

Halichoeres hartzfeldii (Bleeker, 1852). – Taxonomy: **New record** from New Caledonia, based on three specimens observed at Ouvéa, Loyalty Islands by M. KULBICKI in 1997; previously reported as *Halichoeres zeylonicus* (non Bennett, 1833) by LABOUTE & GRANDPERRIN (2000: 361). – Distribution: NC: [1], [5], 6, 7, 8, [9], [10], 14. Depth: 1–30 m. Marine species.

Halichoeres hortulanus (Lacepède, 1801). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 46) and KULBICKI et al. (1994: 29). SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–30 m. Marine species.

Halichoeres margaritaceus (Valenciennes in Cuvier & Valenciennes, 1839). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 46) and KULBICKI et al. (1994: 29). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18; NZ: 20. Depth: 0–5 m. Marine species.

Halichoeres melanurus (Bleeker, 1852) – Girelle à trois yeux. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 46) and KULBICKI & WILLIAMS (1997: 19); also reported as *Halichoeres timorensis* (non Bleeker, 1852) and *Halichoeres vrolikii* (non Bleeker, 1855) by RIVATON et al. (1990: 46), as *Halichoeres howeni* by THOLLOT & KULBICKI (1988: 618), and as *Coris aurilineata* (non Randall & Kuiter, 1982) by LABOUTE & GRANDPERRIN (2000: 355). IRDNC, SMNS and USNM material. – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: [17], 18. Depth: 0–10 m. Marine species.

Halichoeres melasmapomus Randall, 1981. – Taxonomy: **New record** from New Caledonia, based on one specimen observed at Moindou in the southwestern lagoon of Grande Terre by M. KULBICKI in 1997. – Distribution: NC: [6], [7], 8, [9], [10], [14]. Depth: 4–30 m. Marine species.

Halichoeres miniatus (Valenciennes [ex Kuhl & Hasselt] in Cuvier & Valenciennes, 1839). – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 19). SMNS and USNM material. – Distribution: NC: 5, [6], 7, 8, [9], [10], 14. Depth: 0–10 m. Marine species.

Halichoeres nebulosus (Valenciennes in Cuvier & Valenciennes, 1839) – Girelle nébuleuse. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 46) and KULBICKI & WILLIAMS (1997: 19). SMNS material. – Distribution: NC: 6, 7, 8, 9, [10], [11], [12], 14; AU: 17. Depth: 0–40 m. Marine species.

Halichoeres prosopeion (Bleeker, 1853). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 46) and KULBICKI et al. (1994: 29). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 2–40 m. Marine species.

Halichoeres richmondi Fowler & Bean, 1928. – Taxonomy: First record from New Caledonia by EVANS (2006: 107). Also recorded from Koné, northwestern lagoon, Grande Terre, based on one specimen observed by M. KULBICKI in 1997, and a video taken in June 2010. – Distribution: NC: 5, 6, 7, 8, [9], [10]. Depth: 0–15 m. Marine species.

Halichoeres scapularis (Bennett, 1832). – Taxonomy: First record from New Caledonia (Grande Terre) by FRICKE & KULBICKI (2006: 343). SMNS material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–10 m. Marine species.

Halichoeres trimaculatus (Quoy & Gaimard, 1834) – Girelle à trois tâches. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 125). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 2–30 m. Marine species.

Hemigymnus fasciatus (Bloch, 1792) – Tamarin à bandes noires, chien noir. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 120). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–20 m. Marine species.

Hemigymnus melapterus (Bloch, 1791) – Tamarin vert, labre aux grandes lèvres. – Taxonomy: First record from New Caledonia by WHITLEY (1961: 64). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–30 m. Marine species.

Hologymnosus annulatus (Lacepède, 1801). – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 20); previously reported as *Bodianus* sp. by JOUAN (1861: 273). – Distribution: NC: 5, 6, 7, 8, 9, [10], 14. Depth: 2–30 m. Marine species.

Hologymnosus doliatus (Lacepède [ex Commerson], 1801) – Uoh (Ile Ouen). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 46) and KULBICKI et al. (1994: 29). – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], [11], [12], 14; AU: 17. Depth: 2–30 m. Marine species.

Hologymnosus longipes (Günther, 1862). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 46) and RANDALL et al. (1997: 324). – Distribution: NC: 5, [6], [7], 8, [9], [10], 14. Depth: 5–30 m. Marine species.

Iniistius aneitensis (Günther, 1862). – Taxonomy: First record from New Caledonia as *Xyrichthys aneitensis* by

LABOUTE & GRANDPERRIN (2000: 371). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 12–92 m. Marine species.

Iniistius celebicus (Bleeker, 1856). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by FRICKE & KULBICKI (2006: 343); previously reported as *Xyrichthys* sp. by KULBICKI et al. (1994: 30). – Distribution: NC: 1; AU: 17. Depth: 6–20 m. Marine species.

Iniistius pavo (Valenciennes in Cuvier & Valenciennes, 1840) – Rason paon, vieux monde. – Taxonomy: First record from New Caledonia as *Hemipteronotus pavo* by FOURMANOIR & LABOUTE (1976: 124). – Distribution: NC: 1, 5, 6, [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 1–100 m. Transitional water and marine.

Iniistius pentadactylus (Linnaeus, 1758). – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by EVANS (2006: 107). – Distribution: NC: [6], 7, [8], [9], [10]. Depth: 2–18 m. Marine species.

Labrichthys unilineatus (Guichenot, 1847). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 46) and KULBICKI et al. (1994: 29). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 0–20 m. Marine species.

Labroides bicolor Fowler & Bean, 1928 – Nettoyeur à deux couleurs. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 126). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17. Depth: 0–40 m. Marine species.

Labroides dimidiatus (Valenciennes in Cuvier & Valenciennes, 1839) – Nettoyeur partagé. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 126). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 1–40 m. Marine species.

Labroides pectoralis Randall & Springer, 1975 – Nettoyeur à tête orange. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 47) and KULBICKI & WILLIAMS (1997: 20). – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 2–28 m. Marine species.

Labroides rubrolabiatus Randall, 1958 – Nettoyeur à tête orange. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 127). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–32 m. Marine species.

Labropsis australis Randall, 1981. – Taxonomy: Recorded from New Caledonia in original description by RANDALL (1981: 149–154). BPBM, MNHN and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 2–55 m. Marine species.

Labropsis xanthonota Randall, 1981. – Taxonomy: Recorded from New Caledonia in original description by RANDALL (1981: 138–143). BPBM, MNHN and USNM material. – Distribution: NC: 1, 5, [6], 7, 8, 9, [10], 14. Depth: 7–55 m. Marine species.

Macropharyngodon choati Randall, 1978. – Taxonomy: First record from New Caledonia by PARENTI & RANDALL (2000: 30) and KUITER (2002: 144). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–30 m. Marine species.

Macropharyngodon kuiteri Randall, 1978. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 47) and KULBICKI et al. (1994: 29). – Distribution: NC: 1, [6], 7, 8, [9], [10], [11], [12]; AU: 17. Depth: 5–55 m. Marine species.

Macropharyngodon meleagris (Valenciennes in Cuvier & Valenciennes, 1839) – Labre léopard. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 47) and KULBICKI et al. (1994: 29). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 0–30 m. Marine species.

Macropharyngodon negrosensis Herre, 1932. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 47) and KULBICKI et al. (1994: 29). – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 2–32 m. Marine species.

Novaculoides macrolepidotus (Bloch, 1791). – Taxonomy: **New record** from New Caledonia, based on one specimen observed off Nouméa in the southwestern lagoon of Grande Terre by M. KULBICKI in 1997. IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 3–25 m. Marine species.

Novaculichthys taeniourus (Lacepède [ex Commerson], 1801) – Rason algue, vieux monde, sorcier. – Taxonomy: First record from New Caledonia as *Hemipteronotus taeniourus* by FOURMANOIR & LABOUTE (1976: 123). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17, 18. Depth: 3–25 m. Marine species.

Oxycheilinus bimaculatus (Valenciennes in Cuvier & Valenciennes, 1840). – Taxonomy: First record from New Caledonia by THOLLOT & KULBICKI (1989: 618). IRDNC material. – Distribution: NC: 1, 5, [6], 7, 8, 9, 10, 11, [12], 14; AU: 17. Depth: 1–110 m. Marine species.

Oxycheilinus celebicus (Bleeker, 1853). – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 346, 365). – Distribution: NC: [6], 7, 8, 9, 10. Depth: 3–40 m. Marine species.

Oxycheilinus digramma (Lacepède, 1801) – Vieille à lignes violettes. – Taxonomy: First record from New Caledonia as *Cheilinus diagrammus* by FOURMANOIR & LABOUTE (1976: 116). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 2–50 m. Marine species.

Oxycheilinus nigromarginatus Randall, Westneat & Gomon, 2003. – Taxonomy: Originally described from New Caledonia by RANDALL et al. (2003: 365–369); previously reported as *Oxycheilinus* sp. 2 by PARENTI & RANDALL (2000: 33), and as *Oxycheilinus* sp. 1 and sp. 2 by LABOUTE & GRANDPERRIN (2000: 366). BPBM, CAS, NSMT and USNM material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 10–27 m. Marine species.

Oxycheilinus orientalis (Günther [ex Bleeker], 1862). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 45) and KULBICKI & WANTIEZ (1990: 125). IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], 10, 14. Depth: 15–80 m. Marine species.

Oxycheilinus unifasciatus (Streets, 1877) – Labre rose. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 45) and KULBICKI et al. (1994: 28); previously reported as *Cheilinus rhodocrous* (non Günther in Playfair & Günther, 1867) by FOURMANOIR & LABOUTE (1976: 117). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 1–160 m. Marine species.

Pseudocheilinus evanidus Jordan & Evermann, 1903. – Taxonomy: First record from New Caledonia by RIVATON et

al. (1990: 47) and KULBICKI et al. (1994: 29). BPBM, MNHN, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 2–61 m. Marine species.

Pseudocheilinus hexataenia (Bleeker, 1857) – Labre à six bandes. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 47), RIVATON & RICHER DE FORGES (1990: 29), and KULBICKI et al. (1994: 29). BPBM, MNHN, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 2–35 m. Marine species.

Pseudocheilinus ocellatus Randall, 1999. – Taxonomy: Recorded from New Caledonia in original description by RANDALL (1999: 21–25); previously reported as *Pseudocheilinus* species by KULBICKI & WILLIAMS (1997: 20). USNM material. – Distribution: NC: 14. Depth: 20–58 m. Marine species.

Pseudocheilinus octotaenia Jenkins, 1901. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 47) and KULBICKI et al. (1994: 30). BPBM, MNHN and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 14. Depth: 2–50 m. Marine species.

Pseudocheilinus tetrataenia Schultz in Schultz, Chapman, Lachner & Woods, 1960. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 47) and RANDALL (2005a: 431). BPBM material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 6–44 m. Marine species.

Pseudocoris heteroptera (Bleeker, 1857). – Taxonomy: **New record** from New Caledonia; previously reported as *Pseudolepidaplois philippinus* and *Pseudocoris philippina* by RIVATON et al. (1990: 47), and as *Pseudocoris bleekeri* (non Hubrecht, 1876) by FRICKE & KULBICKI (2006: 343). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 2–54 m. Marine species.

Pseudocoris yamashiroi (Schmidt, 1931). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 47) and KULBICKI & WILLIAMS (1997: 20). IRDNC and USNM material. – Distribution: NC: 5, [6], 7, 8, [9], [10], [11], [12], 14; AU: [18]; NZ: 20. Depth: 5–25 m. Marine species.

Pseudodax moluccanus (Valenciennes in Cuvier & Valenciennes, 1840). – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 367). – Distribution: NC: [1], 5, [6], 7, 8, [9], [10], 14. Depth: 3–60 m. Marine species.

Pseudojuloides cerasinus (Snyder, 1904). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 47) and KULBICKI et al. (1994: 30). USNM material. – Distribution: NC: 1, [6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 2–61 m. Marine species.

Pseudojuloides elongatus Ayling & Russell, 1977. – Taxonomy: **New record** from New Caledonia, based on two specimens observed in the southwestern lagoon of Grande Terre by M. KULBICKI in 1997. IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18; NZ: 23. Depth: 5–50 m. Marine species.

Pteragogus sp. – Taxonomy: Reported from New Caledonia as *Pteragogus cryptus* (non Randall, 1981) by RIVATON et al. (1990: 47) and KULBICKI et al. (1994: 30), as '*Pteragogus* cf. *cryptus* (1)' by KUITER (2002: 56), and as *Pteragogus* sp. by FRICKE & KULBICKI (2006: 343). IRDNC and SMNS material. – Distribution: NC: 1, [6], 7, 8, 9, [10], 14. Depth: 2–69 m. Marine species.

Pteragogus enneacanthus (Bleeker, 1853). – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 30). IRDNC material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 2–64 m. Marine species.

Pteragogus flagellifer (Valenciennes in Cuvier & Valenciennes, 1839). – Taxonomy: First record from New Caledonia (Chesterfield Islands) as *Pteragogus flagellifera* by RIVATON et al. (1990: 47) and KULBICKI et al. (1994: 30); also reported as *Pteragogus opercularis* (non Peters, 1855) by RIVATON (1989: 145). IRDNC material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 2–78 m. Marine species.

Stethojulis bandanensis (Bleeker, 1851) – Girelle à lignes bleues. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 129); previously reported as *Stethojulis axillaris* (non Quoy & Gaimard, 1824) by WHITLEY (1961: 65). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18; NZ: 20. Depth: 0–30 m. Marine species.

Stethojulis notialis Randall, 2000. – Taxonomy: Recorded from New Caledonia in original description by RANDALL (2000: 24–29); previously reported as *Stethojulis interrupta* (non Bleeker, 1851) by RIVATON et al. (1990: 47). IRDNC, MNHN, SMNS and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], 10, [11], 12; AU: 18. Depth: 0–6 m. Marine species.

Stethojulis strigiventer (Bennett, 1833). – Taxonomy: First record from New Caledonia by WHITLEY (1961: 65). AMS, BPBM, MNHN, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17. Depth: 1–15 m. Marine species.

Stethojulis trilineata (Bloch & Schneider, 1801). – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by EVANS (2006: 108). – Distribution: NC: 6, 7, 8, [9], [10]. Depth: 1–20 m. Marine species.

Suezichthys arquatus Russell, 1985. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 47) and KUITER (2002: 96); previously reported as *Pseudolabrus* sp. by ALLEN et al. (1976: 422). – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18; NZ: 20, 23. Depth: 13–100 m. Marine species.

Suezichthys devisi (Whitley, 1941). – Taxonomy: First record from New Caledonia by KUITER (2002: 100); previously reported as *Suezichthys gracilis* (non Steindachner & Döderlein, 1887) by RIVATON et al. (1990: 47). – Distribution: NC: 5, [6], [7], 8, 9, [10], 11, [12], 14. Depth: 5–30 m. Marine species.

Terelabrus rubrovittatus Randall & Fourmanoir, 1988. – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) by RANDALL & FOURMANOIR (1988). BPBM material (holotype). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 92–100 m. Marine species.

Thalassoma amblycephalum (Bleeker, 1856). – Taxonomy: First record from New Caledonia as *Thalassoma amblycephalus* by BORODIN (1932: 94); subsequently reported as *Thalassoma melanochir* by WHITLEY (1961: 65). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18; NZ: 20, 23. Depth: 0–15 m. Marine species.

Thalassoma hardwicke (Bennett, 1830) – Girelle à six bandes noires. – Taxonomy: First record from New Caledonia as *Thalassoma hardwickei* by FOURMANOIR & LABOUTE

(1976: 127). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–15 m. Marine species.

Thalassoma lunare (Linnaeus, 1758) – Girelle verte. – Taxonomy: First record from New Caledonia by Whitley (1961: 65); previously reported as *Labrus* sp. by Jouan (1861: 269–270). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18; NZ: 20, 23. Depth: 0–20 m. Marine species.

Thalassoma lutescens (Lay & Bennett [ex Solander], 1839) – Girelle jaune. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 128); previously reported as *Thalassoma aneitense* by Whitley (1961: 65). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18; NZ: 20, 23. Depth: 0–30 m. Marine species.

Thalassoma nigrofasciatum Randall, 2003 – Girelle à quatre bandes noires. – Taxonomy: First record from New Caledonia by Randall (2005a: 440); previously reported as *Julis jansenii* (non Bleeker, 1856) by Günther (1909: 295). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 11, 12, 14; AU: 17, 18; NZ: 20. Depth: 0–15 m. Marine species.

Thalassoma purpureum (Forsskål in Niebuhr, 1775) – Girelle hublot. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 47) and Kulbicki et al. (1994: 30). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17, 18; NZ: 20. Depth: 0–10 m. Marine species.

Thalassoma quinquevittatum (Lay & Bennett, 1839). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 47) and Kulbicki et al. (1994: 30). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, [6], 7, 8, 9, [10], [11], [12], 14; AU: 17. Depth: 0–40 m. Marine species.

Thalassoma trilobatum (Lacepède [ex Commerson], 1801). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 30). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], [11], 12, 14; AU: 17, 18; NZ: 20. Depth: 0–10 m. Marine species.

Wetmorella albofasciata Schultz & Marshall, 1954. – Taxonomy: First record from New Caledonia by Rivaton (1989: 145). IRDNC material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 3–42 m. Marine species.

Wetmorella nigropinnata (Seale, 1901) – Labre à bandes jaunes. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 47) and Kulbicki et al. (1994: 30); previously reported as *Wetmorella ocellata* by Fourmanoir & Laboute (1976: 128). IRDNC and USNM material. – Distribution: NC: 1, [6], [7], 8, [9], [10], 14. Depth: 1–30 m. Marine species.

Xiphocheilus typus Bleeker, 1857. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 47) and Kulbicki & Wantiez (1990: 125). Parenti & Randall (2000: 48) used the junior synonym *Xiphocheilus quadrimaculatus* Günther, 1880 with priority over *Xiphocheilos typus* Bleeker, 1856 without comment. IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], 10. Depth: 35–85 m. Marine species.

Scaridae

Bolbometopon muricatum (Valenciennes in Cuvier & Valenciennes, 1840) – Perroquet à bosse. – Taxonomy: First record from New Caledonia as *Bolbometopon muricatus* by Fourmanoir & Laboute (1976: 108). – Distribution: NC: 5, 6, 7, 8, 9, [10], 14. Depth: 1–30 m. Marine species.

Calotomus carolinus (Valenciennes in Cuvier & Valenciennes, 1840) – Perroquet des Carolines. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1993: 29). – Distribution: NC: 1, 6, 7, 8, [9], 10, [11], [12], 14. Depth: 0–69 m. Marine species.

Calotomus spinidens (Quoy & Gaimard, 1824). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Kulbicki et al. (1994: 30). – Distribution: NC: 1, 8. Depth: 0–72 m. Marine species.

Cetoscarus ocellatus (Valenciennes in Cuvier & Valenciennes, 1840) – Perroquet à points rouges. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 344); previously reported as *Scarus cretensis* (non Linnaeus, 1758) by Borodin (1932: 95), and as *Cetoscarus bicolor* (non Rüppell, 1829) by Whitley (1958: 35–36). AMS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–30 m. Marine species.

Chlorurus bleekeri (Beaufort in Weber & Beaufort, 1940) – Perroquet à joue blanche. – Taxonomy: First record from New Caledonia as *Scarus bleekeri* by Rivaton et al. (1990: 66) and as *Chlorurus bleekeri* by Laboute & Grandperrin (2000: 376). – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, 14. Depth: 0–10 m. Marine species.

Chlorurus frontalis (Valenciennes in Cuvier & Valenciennes, 1840). – Taxonomy: First record from New Caledonia as *Scarus bleekeri* by Rivaton et al. (1990: 66) and Kulbicki et al. (1994: 30). – Distribution: NC: 1, [5], [6], 7, 8, [9], [10], [11], 12. Depth: 1–40 m. Marine species.

Chlorurus japanensis (Bloch, 1789) – Perroquet de Bloch. – Taxonomy: First record from New Caledonia by Evans (2006: 109). – Distribution: NC: 7, [9]. Depth: 1–20 m. Marine species.

Chlorurus microrhinos (Bleeker, 1854) – Perroquet bleu. – Taxonomy: First record from New Caledonia as *Scarus microrhinos* by Rivaton et al. (1990: 66) and Kulbicki et al. (1994: 30); subsequently reported as *Scarus gibbus* (non Rüppell, 1828) by Fourmanoir & Laboute (1976: 112, and as *Scarus rhodouropterus* (non Bleeker, 1861) by Rivaton & Bourret (1999: 166). SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–35 m. Marine species.

Chlorurus sordidus (Forsskål in Niebuhr, 1775) – Perroquet sale. – Taxonomy: First record from New Caledonia as *Scarus sordidus* by Fourmanoir & Laboute (1976: 112). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–50 m. Marine species.

Hipposcarus longiceps (Valenciennes in Cuvier & Valenciennes, 1840) – Perroquet à longue tête. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1994: 30); previously reported as *Scarus harid* (non Forsskål in Niebuhr, 1775) by Fourmanoir & Laboute (1976: 110). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–40 m. Marine species.

Leptoscarus vaigiensis (Quoy & Gaimard, 1824) – Perroquet marbré. – Taxonomy: First record from New Caledonia by Whitley (1961: 64). AMS and IRDNC material. – Distribution: NC: 5, 6, 7, 8, [9], [10], [11], [12]; AU: 17, [18]; NZ: 23. Depth: 1–15 m. Marine species.

Scarus altipinnis (Steindachner, 1879) – Perroquet à bec vert. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1993: 29); previously reported as *Scarus chlorodon* (non Jenyns, 1842) by Fourmanoir & Laboute (1976: 108). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–50 m. Marine species.

Scarus chameleon Choat & Randall, 1986. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1994: 30). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 3–30 m. Marine species.

Scarus dimidiatus Bleeker, 1859. – Taxonomy: First record from New Caledonia by Bellwood (2001: 3482). IRDNC material. – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17. Depth: 0–12 m. Transitional water and marine.

Scarus flavipectoralis Schultz, 1958. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki & Williams (1997: 20). – Distribution: NC: 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 1–20 m. Marine species.

Scarus forsteni (Bleeker, 1861). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1994: 30); previously reported as *Scarus mus* by Plessis & Fourmanoir (1966c: 136). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], [11], 12, 14. Depth: 2–30 m. Marine species.

Scarus frenatus Lacepède [ex Commerson], 1802. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1994: 30); previously reported as *Scarus upolensis* by Plessis & Fourmanoir (1966c: 135–136). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–20 m. Marine species.

Scarus ghobban Forsskål in Niebuhr, 1775 – Perroquet à bandes bleues. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 110); subsequently reported as *Scarus* sp. 3 by Laboute & Grandperrin (2000: 383). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–90 m. Transitional water and marine.

Scarus globiceps Valenciennes in Cuvier & Valenciennes, 1840. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1994: 30). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–18 m. Marine species.

Scarus longipinnis Randall & Choat, 1980. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1994: 30). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14; AU: 17. Depth: 2–69 m. Marine species.

Scarus niger Forsskål in Niebuhr, 1775 – Perroquet dorade. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 113). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–15 m. Marine species.

Scarus oviceps Valenciennes in Cuvier & Valenciennes, 1840 – Perroquet à casquette. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1994: 30). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–15 m. Marine species.

Scarus psittacus Forsskål in Niebuhr, 1775. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1993: 29). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 11, 12, 14; AU: 17. Depth: 0–25 m. Marine species.

Scarus quoyi Valenciennes in Cuvier & Valenciennes, 1840 – Perroquet de Quoy. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Randall et al. (1997: 530); previously reported as *Pseudoscarus chrysopoma* by Borodin (1932: 95). – Distribution: NC: 5, [6], 7, 8, 9, [10]. Depth: 2–18 m. Marine species.

Scarus rivulatus Valenciennes in Cuvier & Valenciennes, 1840 – Perroquet à museau rayé. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1994: 30); previously reported as *Scarus fasciatus* by Fourmanoir & Laboute (1976: 110). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17, 18; NZ: 20. Depth: 1–30 m. Marine species.

Scarus rubroviolaceus Bleeker, 1847. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1993: 29). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17. Depth: 1–36 m. Marine species.

Scarus schlegeli (Bleeker, 1861) – Perroquet à raie jaune. – Taxonomy: First record from New Caledonia by Randall (2005a: 461); previously reported as *Scarus venosus* by Fourmanoir & Laboute (1976: 110). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–50 m. Marine species.

Scarus spinus (Kner, 1868). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66) and Kulbicki et al. (1994: 31). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 2–25 m. Marine species.

Chiasmodontidae

Chiasmodon pluriradiatus Parr, 1939. – Taxonomy: First record from New Caledonia by Melo (2009: 595–597); previously reported as *Chiasmodon lavenbergi* by Prokofiev & Kukuev (2009: 925). IRDNC material. – Distribution: NC: 4; AU: 17; NZ: 22, 25, 30. Depth: 150–1600 m. Marine species.

Dysalotus alcocki MacGilchrist, 1905. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 35) and Rivaton & Bourret (1999: 324). – Distribution: NC: 4. Depth: 0–2100 m. Marine species.

Kali kerberti Weber, 1913. – Taxonomy: **New record** from New Caledonia (southwest of Grande Terre); previously reported as *Kali* sp. by Rivaton et al. (1990: 35) and Rivaton & Bourret (1999: 324). IRDNC material. – Distribution: NC: 4. Depth: 1300–2458 m. Marine species.

Pseudoscopelus obtusifrons (Fowler, 1934). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 35) and Rivaton & Bourret (1999: 324); previously reported as *Pseudoscopelus sagamianus* (non Tanaka, 1908) by Fourmanoir (1971b: 114, 117). IRDNC material. – Distribution: NC: 4; AU: 18. Depth: 124–2250 m. Marine species.

Champsodontidae

Champsodon guentheri Regan, 1908. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 34), Rivaton & Richer de Forges (1990: 27), and Kulbicki et al. (1994: 31). IRDNC material. – Distribution: NC: 1, 4. Depth: 0–1020 m. Marine species.

Champsodon longipinnis Matsubara & Amaoka in Matsubara, Ochiai, Amaoka & Nakamura, 1964. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 34), Rivaton & Richer de Forges (1990: 27). IRDNC material. – Distribution: NC: 4, 8. Depth: 0–267 m. Marine species.

Champsodon nudivittis (Ogilby, 1895). – Taxonomy: **New record** from New Caledonia, based on SMNS material from Ouvéa, Loyalty Islands: SMNS 23696 (1 specimen), SMNS 23751 (1 specimen), SMNS 23757 (2 specimens). – Distribution: NC: 14. Depth: 0–335 m. Marine species.

Champsodon snyderi Franz, 1910. – Taxonomy: First record from New Caledonia by Rivaton (1989: 152). IRDNC material. – Distribution: NC: 1, 4. Depth: 0–370 m. Marine species.

Pinguipedidae

Kochichthys flavofasciatus (Kamohara, 1936). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 53) and Rivaton & Richer de Forges (1990: 32). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 80–200 m. Marine species.

**Parapercis albipinna* Randall, 2008. – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) by Randall (2008: 160). BPBM material (holotype). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 100 m. Marine species.

Parapercis australis Randall, 2003 – Parapercis cylindrique. – Taxonomy: Recorded from New Caledonia in original description by Randall (2003: 4–9); previously reported as *Parapercis cylindrica* (non Bloch, 1792) by Whitley (1961: 65), and as *Parapercis maculata* (non Bloch & Schneider, 1801) by Rivaton et al. (1990: 60). BPBM, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17. Depth: 1–82 m. Marine species.

Parapercis binivirgata (Waite, 1904). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 155). IRDNC material. – Distribution: NC: 1; NZ: 23. Depth: 295–330 m. Marine species.

Parapercis clathrata Ogilby, 1910. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 21). AMS, IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 2–50 m. Marine species.

Parapercis colemani Randall & Francis, 1993. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 345). SMNS material. – Distribution: NC: 14; AU: 18. Depth: 2–126 m. Marine species.

**Parapercis flavescens* Fourmanoir & Rivaton, 1979. – Taxonomy: Originally described from New Caledonia (south of Île des Pins) by Fourmanoir & Rivaton (1979: 412–413). MNHN material (holotype). – Distribution: NC: 12. Depth: 360 m. Marine species.

Parapercis hexophtalma (Cuvier [ex Ehrenberg] in Cuvier & Valenciennes, 1829) – Parapercis multiocellé. – Taxonomy: First record from New Caledonia as *Parapercis hexophthalmus* by Whitley (1961: 65); subsequently reported as *Parapercis polyophthalma* by Fourmanoir & Laboute (1976: 134). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–25 m. Marine species.

Parapercis lineopunctata Randall, 2003. – Taxonomy: Recorded from New Caledonia (Chesterfield Islands) in original description by Randall (2003: 12–16). BPBM material. – Distribution: NC: 1; AU: 17. Depth: 3–28 m. Marine species.

Parapercis millepunctata (Günther, 1860). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 31). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 3–50 m. Marine species.

Parapercis multiplicata Randall, 1984. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 60) and Kulbicki & Williams (1997: 21). USNM material. – Distribution: NC: 5, [6], 7, 8, [9], [10], 14. Depth: 4–30 m. Marine species.

Parapercis nebulosa (Quoy & Gaimard, 1825). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 345). SMNS material. – Distribution: NC: 14. Depth: 11–120 m. Marine species.

Parapercis schauinslandii (Steindachner, 1900). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 60) and Kulbicki & Wantiez (1990: 124). SMNS and USNM material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], 14. Depth: 32–82 m. Marine species.

Parapercis snyderi Jordan & Starks, 1905. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 60), Rivaton & Richer de Forges (1990: 32), and Randall (2003: 16–17). BPBM material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 10–25 m. Marine species.

Parapercis xanthozona (Bleeker, 1849) – Parapercis à six ocelles. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 60), Rivaton & Bourret (1999: 168), and Laboute & Grandperrin (2000: 391). IRDNC material. – Distribution: NC: 5, [6], 7, 8, [9], [10]. Depth: 10–20 m. Marine species.

Trichonotidae

Trichonotus elegans Shimada & Yoshino, 1984. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 76), Rivaton & Richer de Forges (1990: 36), and Laboute & Grandperrin (2000: 387). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 10–30 m. Marine species.

Trichonotus filamentosus (Steindachner, 1867). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 76), Rivaton & Richer de Forges (1990: 36), and Kulbicki et al. (1994: 31). IRDNC material. – Distribution: NC: 1. Depth: 10–217 m. Marine species.

Trichonotus setiger Bloch & Schneider, 1801. – Taxonomy: First record from New Caledonia (Grande Terre) by Laboute & Grandperrin (2000: 385, 387); previously reported as *Trichonotus* sp. by Rivaton & Richer de Forges (1990: 36). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 10–80 m. Marine species.

Creediidae

Chalixodytes tauensis Schultz, 1943. – Taxonomy: First record from New Caledonia (Loyalty Islands) as *Chalixodytes tauensis* and *C. chameleontoculis* by Kulbicki & Williams (1997: 21). IRDNC and USNM material. – Distribution: NC: 14. Depth: 0–10 m. Marine species.

Limnichthys nitidus Smith, 1958. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 345); previously reported as *Limnichthys donaldsoni* by Rivaton et al. (1990: 37), and as *Limnichthys* sp. by Rivaton & Richer de Forges (1990: 27). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 14; AU: 17. Depth: 0–12 m. Marine species.

Percophidae

Acanthaphritis grandisquamis (Günther, 1880). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 60); also reported as *Acanthaphrites* sp. by Rivaton (1989: 152). IRDNC material. – Distribution: NC: 1. Depth: 48–217 m. Marine species.

Bembrops caudimacula Steindachner, 1876. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 60); subsequently reported as *Bembrops* sp. by Kulbicki et al. (1994: 31). – Distribution: NC: 1. Depth: 186–590 m. Marine species.

Bembrops filifera Gilbert, 1905. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 155). IRDNC material. – Distribution: NC: 1. Depth: 300–350 m. Marine species.

Chrionema chryseres Gilbert, 1905. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 155). IRDNC material. – Distribution: NC: 1. Depth: 335–490 m. Marine species.

Pteropsaron sp. – Taxonomy: Reported from New Caledonia (Chesterfield Islands) by Rivaton (1989: 155). – Distribution: NC: 1. Depth: 220 m. Marine species.

Pteropsaron neocaledonicus Fourmanoir & Rivaton, 1979. – Taxonomy: Originally described from New Caledonia by Fourmanoir & Rivaton (1979: 419). MNHN material (holotype). – Distribution: NC: 12. Depth: 360 m. Marine species.

Ammodytidae

Ammodytoides vagus (McCulloch & Waite, 1916). – Taxonomy: First record from New Caledonia as *Bleekeria vaga* by Rivaton et al. (1990: 2), and as *Ammodytoides vagus* by Fricke & Kulbicki (2006: 345); also reported as *Ammodytes* sp. by Laboute & Grandperrin (2000: 387). IRDNC material. – Distribution: NC: [6], [7], 8, [9], 10, [11], [12]; AU: 17. Depth: 5–35 m. Marine species.

Bleekeria mitsukurii Jordan & Evermann, 1902. – Taxonomy: First record from New Caledonia (Chesterfield Islands) as *Embolichthys mitsukurii* by Rivaton et al. (1990: 2) and Kulbicki et al. (1994: 31). IRDNC material. – Distribution: NC: 1. Depth: 56–217 m. Marine species.

Uranoscopidae

Ichthyscopus sannio Whitley, 1936. – Taxonomy: **New record** from New Caledonia; previously reported as *Ichthyoscopus lebeck* (non Bloch & Schneider, 1801) by Rivaton et al. (1990: 76) and Rivaton & Bourret (1999: 170). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–10 m. Marine species.

Uranoscopus oligolepis Bleeker, 1878. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 76) and Rivaton & Bourret (1999: 170). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 2–35 m. Marine species.

Uranoscopus sulphureus Valenciennes in Cuvier & Valenciennes, 1832. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 31). – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 5–350 m. Marine species.

Tripterygiidae

Ceratobregma helenae Holleman, 1987. – Taxonomy: First record from New Caledonia by Fricke (1994: 160–163). MNHN, ROM and USNM material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 1–40 m. Marine species.

Enneapterygius elegans (Peters, 1876). – Taxonomy: First record from New Caledonia by Fricke (1994: 203–208). BPBM, IRDNC, MNHN, ROM, SMNS and USNM material. – Distribution: NC: [6], [7], 8, 9, [10], 14. Depth: 0–12 m. Marine species.

Enneapterygius flavoccipitis Shen in Shen & Wu, 1994. – Taxonomy: First record from New Caledonia by Fricke (1997: 199–209). ROM, SMNS and USNM material. – Distribution: NC: [6], [7], 8, 9, 10, 14. Depth: 0–22 m. Marine species.

Enneapterygius hemimelas (Kner & Steindachner, 1867). – Taxonomy: First record from New Caledonia by Fricke (1994: 215–229); also reported as *Enneapterygius semilarvatus* by Kulbicki et al. (1994: 32). BPBM, IRDNC, ROM, SMNS and USNM material. – Distribution: NC: 1, [6], 7, 8, 9, [10], [11], 12, 14. Depth: 0–30 m. Marine species.

Enneapterygius howensis Fricke, 1997. – Taxonomy: First record from New Caledonia by Fricke (2001: 4). SMNS material. – Distribution: NC: [6], [7], 8, 9, [10], [11], [12]; AU: 17. Depth: 0–9 m. Marine species.

Enneapterygius nanus (Schultz in Schultz, Chapman, Lachner & Woods, 1960). – Taxonomy: First record from New Caledonia by Fricke (1994: 255–259). BPBM, ROM, SMNS and USNM material. – Distribution: NC: 1, [6], [7], 8, [9], [10], [11], 12, 14. Depth: 1–30 m. Marine species.

Enneapterygius niger Fricke, 1994. – Taxonomy: Originally described from New Caledonia by Fricke (1994: 259–263). AMS, BPBM, IRDNC, MNHN, NMNZ, ROM, SMNS and USNM material. – Distribution: NC: 6, 7, 8, 9, 10, 11, 12. Depth: 0–15 m. Marine species.

**Enneapterygius paucifasciatus* Fricke, 1994. – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) by Fricke (1994: 264–266). BPBM, MNHN and SMNS material. – Distribution: NC: 8. Depth: 2–4 m. Marine species.

Enneapterygius philippinus (Peters, 1868). – Taxonomy: First record from New Caledonia by Fricke (1997: 274–288); previously reported as *Enneapterygius minutus* by Fricke (1994: 242–250). AMS, ROM, SMNS and USNM material. – Distribution: NC: [6], [7], 8, 9, 10. Depth: 0–8 m. Marine species.

Enneapterygius rhabdotus Fricke, 1994. – Taxonomy: First record from New Caledonia by Fricke (2001: 5). SMNS material. – Distribution: NC: 7, [9], 14. Depth: 1–8 m. Marine species.

Enneapterygius rhothion Fricke, 1997. – Taxonomy: Originally described from New Caledonia by Fricke (1997: 304–310); previously reported as '*Enneapterygius hemimelas* (non Kner & Steindachner, 1867) colour phase V' by Fricke (1994: 219, 221). BPBM, NMNZ, ROM, SMNS and USNM

material. – Distribution: NC: 1, [6], 7, 8, 9, 10, 11, 12, 14. Depth: 0–8 m. Marine species.

Enneapterygius rubicauda Shen in Shen & Wu, 1994. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke (1997: 310–314). USNM material. – Distribution: NC: 14. Depth: 0–7 m. Marine species.

Enneapterygius rufopileus (Waite, 1904). – Taxonomy: First record from New Caledonia by Fricke (1997: 314–321). IRDNC and SMNS material. – Distribution: NC: 8, [9], [10], [11], 12; AU: 17. Depth: 0–6 m. Marine species.

Enneapterygius similis Fricke, 1997. – Taxonomy: Recorded from New Caledonia (Grande Terre) in original description by Fricke (1997: 326–330); previously reported as '*Enneapterygius hemimelas* (non Kner & Steindachner, 1867) intergradations between colour phase I and II' by Fricke (1994: 218, 221). SMNS material (paratype). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–13 m. Marine species.

Enneapterygius triserialis Fricke, 1994. – Taxonomy: Originally described from New Caledonia by Fricke (1997: 304–310). BPBM, MNHN, SMNS and USNM material. – Distribution: NC: 1, [6], [7], 8, [9], [10], 11, [12], 14. Depth: 0–17 m. Marine species.

**Enneapterygius trisignatus* Fricke, 2001. – Taxonomy: Originally described from New Caledonia (northern Grande Terre) by Fricke (2001: 6–8). MNHN and SMNS material. – Distribution: NC: [5], 6, 7. Depth: 1–3 m. Marine species.

Enneapterygius tutuilae Jordan & Seale, 1906. – Taxonomy: First record from New Caledonia by Fricke (1994: 285–297). BPBM, IRDNC, ROM, SMNS and USNM material. – Distribution: NC: 1, [6], 7, 8, 9, [10], 11, 12, 14. Depth: 0–32 m. Marine species.

Enneapterygius williamsi Fricke, 1997. – Taxonomy: Originally described from New Caledonia by Fricke (1997: 361–366). SMNS and USNM material. – Distribution: NC: [6], 7, [9], 14. Depth: 0–10 m. Marine species.

Helcogramma sp. (to be described by J. T. Williams). – Taxonomy: Reported from New Caledonia as *Helcogramma ellioti* (non Herre, 1944) by Hansen (1986: 335–337), as *Helcogramma* sp. by Fricke (1994: 403–409), as *Helcogramma* sp. 7 ("Safra" triplefin) by Fricke (1997: 403–408), and as '*Helcogramma* cf. *ellioti*' by Kulbicki & Williams (1997: 21). BPBM, SMNS and USNM material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 1–15 m. Marine species.

Helcogramma gymnauchen (Weber, 1909). – Taxonomy: **New record** from New Caledonia, based on SMNS 25400 (1 specimen) from Île Nou, off southwestern Grande Terre. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–8 m. Marine species.

Helcogramma hudsoni (Jordan & Seale, 1906). – Taxonomy: First record from New Caledonia as *Tripterygion hudsoni* by Plessis & Fourmanoir (1966c: 141). USNM material. – Distribution: NC: [6], [7], 8, [9], [10], [11], 12. Depth: 0–3 m. Marine species.

Helcogramma novaecaledoniae Fricke, 1994. – Taxonomy: Originally described from New Caledonia by Fricke (1994: 429–430); previously reported as *Helcogramma obtusirostre* (non Klunzinger, 1871) by Hansen (1986: 344, part). MNHN and SMNS material. – Distribution: NC: [6], 7, 8, 9, [10], 11, 12, 14. Depth: 2–38 m. Marine species.

Helcogramma rhinoceros Hansen, 1986. – Taxonomy: **New record** from New Caledonia based on a photograph taken by G. R. Allen at Balabio (Cook Lagoon) in 2006 (fig. XX). – Distribution: NC: 5. Depth: 0–2 m. Marine species.

Helcogramma trigloides (Bleeker, 1858). – Taxonomy: First record from New Caledonia by Fricke (2001: 4) and Fricke (2002c: 193–194). IRDNC and SMNS material. – Distribution: NC: [6], 7, 8, 9, 10. Depth: 0–5 m. Marine species.

Norfolkia brachylepis (Schultz in Schultz, Chapman, Lachner & Woods, 1960). – Taxonomy: First record from New Caledonia by Fricke (1994: 465–470). IRDNC, NMNZ, SMNS and USNM material. – Distribution: NC: 1, 6, 7, 8, 9, 14. Depth: 1–9 m. Marine species.

Norfolkia squamiceps (McCulloch & Waite, 1916). – Taxonomy: First record from New Caledonia by Fricke (1994: 473–475); previously reported as *Norkolkia* sp. by Rivaton et al. (1990: 76). IRDNC, NMNZ, SMNS and USNM material. – Distribution: NC: [6], [7], 8, [9], [10], [11], 12, 14; AU: 17, 18. Depth: 1–12 m. Marine species.

Norfolkia thomasi Whitley, 1964. – Taxonomy: First record from New Caledonia by Fricke (1994: 476–478). NMNZ and USNM material. – Distribution: NC: [6], [7], 8, [9], [10], [11], 14. Depth: 1–20 m. Marine species.

Springerichthys kulbickii (Fricke & Randall in Fricke, 1994). – Taxonomy: Originally described from New Caledonia as *Gracilopterygion kulbickii* by Fricke & Randall in Fricke (1994: 367–373). BPBM, ROM, SMNS and USNM material. – Distribution: NC: [6], 7, 8, 9, [10], 14. Depth: 0–15 m. Marine species.

Ucla xenogrammus Holleman, 1993. – Taxonomy: Recorded from New Caledonia in original description by Holleman (1993: 5–8). NMNZ, ROM, SMNS and USNM material. – Distribution: NC: [1], [6], [7], 8, [9], 10, 14. Depth: 2–41 m. Marine species.

Blenniidae

Alticus sp. (to be described by J. T. Williams). – Taxonomy: Reported from New Caledonia by Fricke & Kulbicki (2006: 346). USNM material. – Distribution: NC: 7, [9]. Depth: 0–2 m. Marine species.

Alticus sertatus (Garman, 1903) – Blennie sauteur. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 21); previously reported as *Alticus saliens* (non Forster, 1788) by Rivaton et al. (1990: 27). IRDNC, SMNS and USNM material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 0–2 m. Marine species.

Andamia sp. – Taxonomy: Reported from New Caledonia as *Andamia reyi* by Rivaton et al. (1990: 27). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–2 m. Marine species.

Andamia amphibius (Walbaum, 1792). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 346). SMNS material. – Distribution: NC: 14. Depth: 0–2 m. Marine species.

Aspidontus dussumieri (Valenciennes in Cuvier & Valenciennes, 1836). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 28) and Kulbicki et al. (1994: 32); previously reported as *Petroscirtes gorrorensis* by Fourmanoir (1971b: 114). IRDNC and USNM material. – Distribution: NC: 1, [6], 7, 8, [9], [10], 14. Depth: 1–20 m. Marine species.

Aspidontus taeniatus Quoy & Gaimard, 1834 – Faux nettoyeur. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 114). IRDNC and USNM material. – Distribution: NC: 1, [6], 7, 8, [9], 10, [11], [12], 14; AU: 17. Depth: 1–20 m. Marine species.

Atrosalarias holomelas (Günther, 1872). – Taxonomy: First record from New Caledonia as *Atrosalarias fuscus holomelas* by Springer & Smith-Vaniz (1968); previously reported as *Atrosalarias fuscus* (non Rüppell, 1838) by Whitley (1961: 64). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14. Depth: 1–20 m. Marine species.

Blenniella chrysospilos (Bleeker, 1857). – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 21). IRDNC, SMNS and USNM material. – Distribution: NC: 5, [6], [7], 8, 9, [10], 14. Depth: 0–6 m. Marine species.

Blenniella paula (Bryan & Herre, 1903). – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by Fricke & Kulbicki (2006: 346). SMNS material. – Distribution: NC: [5], [6], 7, [9]. Depth: 0–3 m. Marine species.

Blenniella periophthalmus (Valenciennes in Cuvier & Valenciennes, 1836). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 28) and Kulbicki et al. (1994: 32). SMNS material. – Distribution: NC: 1, [6], 7, 8, [9], [10], [11], 12. Depth: 0–2 m. Marine species.

Cirripectes alboapicalis (Ogilby, 1899). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 346); previously reported as *Cirripectes* sp. by Laboute & Grandperrin (2000: 397). SMNS material. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12], 14; AU: 17, 18; NZ: 20. Depth: 0–10 m. Marine species.

Cirripectes castaneus (Valenciennes in Cuvier & Valenciennes, 1836). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 28) and Kulbicki & Williams (1997: 21). IRDNC, SMNS and USNM material. – Distribution: NC: 5, [6], 7, 8, 9, [10], 11, 12, 14; AU: 17, 18; NZ: 20. Depth: 0–10 m. Marine species.

Cirripectes chelomatus Williams & Maugé, 1984. – Taxonomy: Recorded from New Caledonia in original description by Williams & Maugé (1984). CAS, IRDNC, MNHN and USNM material. – Distribution: NC: 1, [6], 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–16 m. Marine species.

Cirripectes filamentosus (Alleyne & Macleay, 1877). – Taxonomy: First record from New Caledonia (northern Grande Terre) by Fricke & Kulbicki (2006: 346). SMNS material. – Distribution: NC: [5], [6], 7, [9]. Depth: 0–20 m. Marine species.

Cirripectes fuscoguttatus Strasburg & Schultz, 1953. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 114). SMNS material. – Distribution: NC: [5], [6], 7, [9], 14. Depth: 0–8 m. Marine species.

Cirripectes polyzona (Bleeker, 1868). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 28) and Evans (2006: 111); previously reported as *Blennius* sp. by Jouan (1863: 180). IRDNC and SMNS material. – Distribution: NC: 1, [6], 7, 8, 9, [10], 14. Depth: 0–10 m. Marine species.

Cirripectes stigmaticus Strasburg & Schultz, 1953. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 28) and Kulbicki et al. (1994: 32). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 11, 12, 14. Depth: 0–14 m. Marine species.

Crossosalarias macrospilus Smith-Vaniz & Springer, 1971 – Blennie mitré. – Taxonomy: First record from New Caledonia by Fourmanoir (1981: 28). IRDNC material. – Distribution: NC: [6], [7], 8, [9], 10. Depth: 0–25 m. Marine species.

Ecsenius bicolor (Day [ex Tickell], 1888) – Blennie bicolor. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 140). IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 1–25 m. Marine species.

Ecsenius fourmanoiri Springer, 1972 – Blennie quadrillé. – Taxonomy: Originally described from New Caledonia by Springer (1972: 5). BPBM, IRDNC and USNM material. – Distribution: NC: [6], 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 1–20 m. Marine species.

Ecsenius isos McKinney & Springer, 1976. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 28) and Springer & Randall (1999: 40); subsequently reported as *Ecsenius* sp. by Laboute & Grandperrin (2000: 399). IRDNC, SMNS and USNM material. – Distribution: NC: [6], 7, 8, [9], [10], [11], 12. Depth: 1–20 m. Marine species.

Ecsenius midas Starck, 1969. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 28) and Kulbicki & Williams (1997: 21). IRDNC and USNM material. – Distribution: NC: 5, [6], 7, 8, [9], [10], 14. Depth: 1–40 m. Marine species.

Ecsenius stictus Springer, 1988. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Kulbicki et al. (1994: 32). – Distribution: NC: 1. Depth: 1–20 m. Marine species.

Ecsenius tessera Springer, 1988. – Taxonomy: Originally described from New Caledonia by Springer (1988: 67); subsequently reported as *Ecsenius oculus* (non Springer, 1971) by Laboute & Grandperrin (2000: 399). MNHN and SMNS material. – Distribution: NC: [6], [7], 8, 9, 10, 14. Depth: 1–10 m. Marine species.

Ecsenius yaeyamaensis (Aoyagi, 1954). – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 28); also reported as *Ecsenius nalolo* (non Smith, 1959) by Rivaton et al. (1990: 28) and Kulbicki & Williams (1997: 21), and as *Ecsenius* sp. by Laboute & Grandperrin (2000: 399). – Distribution: NC: [6], 7, 8, [9], [10], 14. Depth: 1–20 m. Marine species.

Enchelyurus ater (Günther, 1877). – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 140). IRDNC and SMNS material. – Distribution: NC: 1, [6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–10 m. Marine species.

Enchelyurus kraussii (Klunzinger, 1871). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 32). IRDNC material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 0–15 m. Marine species.

Entomacrodus caudofasciatus (Regan, 1909). – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 21). IRDNC, SMNS and USNM material. – Distribution: NC: [6], 7, [8], [9], [10], [11], 12, 14; AU: [18]; NZ: 20. Depth: 0–3 m. Marine species.

Entomacrodus decussatus (Bleeker, 1858). – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 21). IRDNC, SMNS and USNM material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 0–1 m. Marine species.

Entomacrodus sealei Bryan & Herre, 1903. – Taxonomy: First record from New Caledonia by SPRINGER & FRICKE (2000: 391, 395–396). SMNS material. – Distribution: NC: [6], 7, [9], 14. Depth: 0–1 m. Marine species.

Entomacrodus striatus (Valenciennes [ex Quoy & Gaimard] in Cuvier & Valenciennes, 1836). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 28) and KULBICKI et al. (1994: 32). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [6], 7, 8, [9], [10], [11], 12, 14; AU: 17, 18. Depth: 0–1 m. Marine species.

Entomacrodus thalassinus (Jordan & Seale, 1906). – Taxonomy: First record from New Caledonia (Grande Terre) by FRICKE & KULBICKI (2006: 347); previously reported as 'Blenniidae indéterminé' by LABOUTE & GRANDPERRIN (2000: 400). SMNS material. – Distribution: NC: [6], [7], 8, 9, [10]. Depth: 0–2 m. Marine species.

Exallias brevis (Kner, 1868) – Blennie ponctué de rouge. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 136). SMNS material. – Distribution: NC: [6], 7, 8, [9], [10], 14. Depth: 0–20 m. Marine species.

Glyptoparus delicatulus Smith, 1959. – Taxonomy: First record from New Caledonia by GABRIÉ et al. (2007: 55). – Distribution: NC: 5. Depth: 0–8 m. Marine species.

Istiblennius dussumieri (Valenciennes in Cuvier & Valenciennes, 1836). – Taxonomy: First record from New Caledonia as *Halmablennius dussumieri* by FOURMANOIR (1981: 28); previously reported as *Salarias meleagris* (non Valenciennes in Cuvier & Valenciennes, 1836) by GÜNTHER (1877: 208), as *Salarias geminatus* by WHITLEY (1927: 304), and as *Halmablennius striatomaculatus* by PLESSIS & FOURMANOIR (1966c: 140). AMS, SMNS and USNM material. – Distribution: NC: [1], [6], 7, 8, [9], 10, [11], 12, 14; AU: [17], 18. Depth: 0–3 m. Marine species.

Istiblennius edentulus (Schneider [ex Forster] in Bloch & Schneider, 1801). – Taxonomy: First record from New Caledonia by WHITLEY (1961: 64). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, [6], 7, 8, [9], [10], [11], 12, 14; AU: 17, 18. Depth: 0–5 m. Marine species.

Istiblennius lineatus (Valenciennes in Cuvier & Valenciennes, 1836) – Blennie rayé. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 28) and MYERS (1999: 228). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–3 m. Marine species.

Meiacanthus anema (Bleeker, 1852). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 28) and MARQUET et al. (1997: 30). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Meiacanthus atrodorsalis (Günther, 1877) – Blennie à bande noire. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 137). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–30 m. Marine species.

Meiacanthus bundoon Smith-Vaniz, 1976. – Taxonomy: **New record** from New Caledonia (northeastern Grande Terre), based on 27 specimens observed at Ouasse by M. KULBICKI in 2004. – Distribution: NC: 7, 8, [9]. Depth: 5–21 m. Marine species.

Meiacanthus ditrema Smith-Vaniz, 1976. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 28) and LABOUTE & GRANDPERRIN (2000: 395). – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 0–18 m. Marine species.

Meiacanthus grammistes (Valenciennes in Cuvier & Valenciennes, 1836). – Taxonomy: First record from New Caledonia as *Petroscirtes grammistes* by RIVATON et al. (1990: 28) and THOLLOT (1996a: 13). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Meiacanthus phaeus Smith-Vaniz, 1976. – Taxonomy: Originally described from New Caledonia by SMITH-VANIZ (1976: 107). AMS material. – Distribution: NC: 1, [6], [7], 8, [9], 10, [11], [12]; AU: 17. Depth: 3–12 m. Marine species.

Nannosalarias nativitatis (Regan, 1909). – Taxonomy: First record from New Caledonia (southern Grande Terre) by FRICKE & KULBICKI (2006: 347). SMNS material. – Distribution: NC: [6], [7], [8], 9, 10. Depth: 0–12 m. Marine species.

Omobranchus germaini (Sauvage, 1883). – Taxonomy: Originally described from New Caledonia as *Petroscirtes germaini* by SAUVAGE (1883: 158); subsequently reported as *Graviceps alexanderi* by WHITLEY (1961: 64). AMS, SMNS and USNM material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–2 m. Marine species.

Omobranchus obliquus (Garman, 1903). – Taxonomy: First record from New Caledonia by MYERS (1999: 220); previously reported as *Omobranchus banditus* (non Smith, 1959) by RIVATON et al. (1990: 28). SMNS and USNM material. – Distribution: NC: [6], [7], 8, [9], 10. Depth: 0–2 m. Marine species.

Omox biporos Springer, 1972. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 28) and THOLLOT (1996a: 13). IRDNC and USNM material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–3 m. Marine species.

Parablennius intermedius (Ogilby, 1915). – Taxonomy: First record from New Caledonia by BATH (2008: 79–87); previously described as *Parablennius tasmanianus caledoniensis* by BATH (1989). SMF, SMNS and USNM material. – Distribution: NC: 8. Depth: 0–3 m. Marine species.

Petroscirtes breviceps (Valenciennes in Cuvier & Valenciennes, 1836) – Blennie à dents en sabre. – Taxonomy: First record from New Caledonia by KULBICKI & WANTIEZ (1990: 124). IRDNC material. – Distribution: NC: 5, [6], 7, 8, [9], [10]. Depth: 0–10 m. Marine species.

Petroscirtes lupus (De Vis, 1886). – Taxonomy: First record from New Caledonia by SMITH-VANIZ (1976: 51); previously reported as *Dasson icelii* by WHITLEY (1961: 64). AMS and IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 1–10 m. Marine species.

Petroscirtes mitratus Rüppell, 1830. – Taxonomy: First record from New Caledonia by SMITH-VANIZ (1976: 32). IRDNC and SMNS material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 0–8 m. Marine species.

Petroscirtes variabilis Cantor, 1849. – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 395). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Petroscirtes xestus Jordan & Seale, 1906. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Kulbicki et al. (1994: 32); previously reported as *Petroscirtes breviceps* (non Valenciennes in Cuvier & Valenciennes, 1836) by Fourmanoir & Laboute (1976: 137). – Distribution: NC: 1. Depth: 0–12 m. Marine species.

Plagiotremus laudandus (Whitley, 1961). – Taxonomy: Originally described from New Caledonia as *Pescadorichthys (Musgravius) laudandus* by Whitley (1961: 63, 65). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17. Depth: 1–30 m. Marine species.

Plagiotremus rhinorhynchos (Bleeker, 1852) – Blennie à lignes bleues. – Taxonomy: First record from New Caledonia as *Petroscirtes rhynorhynchus* by Fourmanoir (1971b: 114). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], 12, 14; AU: 17. Depth: 0–40 m. Marine species.

Plagiotremus tapeinosoma (Bleeker, 1857). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 29) and Kulbicki et al. (1994: 33). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17, 18; NZ: 20, 21, 23. Depth: 0–45 m. Marine species.

Praealticus bilineatus (Peters, 1868). – Taxonomy: First record from New Caledonia by Randall (2005a: 501); previously reported as *Praealticus* sp. by Rivaton et al. (1990: 29). USNM material. – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 0–6 m. Marine species.

Rhabdoblennius snowi (Fowler, 1928). – Taxonomy: First record from New Caledonia by Bath (2004: 21–24); previously reported as *Rhabdoblennius ellipes* (non Jordan & Starks, 1906) by Kulbicki et al. (1994: 33). SMNS material. – Distribution: NC: 1, [6], [7], [8], 9, [10]. Depth: 0–2 m. Marine species.

Salarias alboguttatus Kner, 1867. – Taxonomy: First record from New Caledonia by Randall (2005a: 503). SMNS and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], [10]. Depth: 0–3 m. Marine species.

Salarias fasciatus (Bloch, 1786) – Blennie tâcheté. – Taxonomy: First record from New Caledonia by Whitley (1961: 65); subsequently reported as *Petroscirtes mitratus* (non Rüppell, 1830) by Fourmanoir & Laboute (1976: 137). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 6, 7, 8, [9], 10, [11], 12; AU: 17. Depth: 0–8 m.

Salarias guttatus Valenciennes in Cuvier & Valenciennes, 1836. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 347); previously reported as *Salarias sinuosus* (non Snyder, 1908) by Rivaton et al. (1990: 29). IRDNC, SMNS and USNM material. – Distribution: NC: 5, [6], [7], [8], 9, [10]. Depth: 0–10 m. Marine species.

Stanulus seychellensis Smith, 1959. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 347). SMNS material. – Distribution: NC: 14. Depth: 0–5 m. Marine species.

Stanulus talboti Springer, 1968. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 347). SMNS material. – Distribution: NC: 14; AU: 17. Depth: 0–5 m. Marine species.

Xiphasia setifer Swainson, 1839 – Blennie rubané. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 114). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 2–100 m. Marine species.

Clinidae

**Springeratus* sp. (to be described by D. F. Hoese & R. Fricke). – Taxonomy: Reported from New Caledonia as *Petraites roseus* (non Günther, 1861) by Whitley (1961: 65), as *Petraites sellularius* (non Whitley, 1931) by Whitley (1961: 65), as *Petraites* sp. by Plessis & Fourmanoir (1966c: 141), as *Springerichthys fourmanoiri* and *Petraites nasutus* (non Günther, 1861) by Rivaton et al. (1990: 36), as *Springeratus* sp. by Fricke & Kulbicki (2006: 347), and as *Springeratus caledonicus* (non Sauvage, 1874) by Gabrié et al. (2007: 54). AMS and SMNS material. – Distribution: NC: 8, 10, 14. Depth: 0–6 m. Marine species.

Gobiesocidae

Conidens samoensis (Steindachner, 1906). – Taxonomy: First record from New Caledonia (Grande Terre) by Briggs (1955: 16–17). AMS and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10]; AU: 17. Depth: 0–8 m. Marine species.

Diademichthys lineatus (Sauvage, 1883). – Taxonomy: Originally described from New Caledonia as *Crepidogaster lineatum* by Sauvage (1883: 158–159). AMS, MNHN, SMNS and USNM material. – Distribution: NC: 5, [6], 7, 8, 9, [10], 11, 12, 14. Depth: 0–20 m. Marine species.

Discotrema crinophilum Briggs, 1976. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 39), Rivaton & Richer de Forges (1990: 28) and Kulbicki & Williams (1997: 12); reported as 'Gobiesocid sp. 2' by Kulbicki et al. (1994: 13). SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 0–20 m. Marine species.

Lepadichthys sp. – Taxonomy: Recorded from New Caledonia by Fricke & Kulbicki (2006: 348); this represents an undescribed species. BPBM and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], 10. Depth: 0–5 m. Marine species.

Lepadichthys frenatus Waite, 1904. – Taxonomy: First record from New Caledonia by Briggs (1955: 139–140). AMS and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18. Depth: 0–6 m. Marine species.

Lepadichthys minor Briggs, 1955. – Taxonomy: First record from New Caledonia by Myers (1999: 230); previously reported as *Diplocrepis costatus* (non Ogilby, 1885) by Whitley (1927: 304). AMS and SMNS material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 14. Depth: 0–4 m. Marine species.

Pherallodus indicus (Weber, 1913). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 348); previously listed as *Pherallodus* sp. by Kulbicki & Williams (1997: 12). SMNS material. – Distribution: NC: [5], [7], 14. Depth: 0–6 m. Marine species.

Callionymidae

Callionymus sp. (to be described by R. Fricke). – Taxonomy: Reported from New Caledonia (Chesterfield Islands) as *Calliurichthys japonicus* (non Houttuyn, 1782) by Rivaton et al.

(1990: 30), as *Callionymus scaber* (non McCulloch, 1926) by FRICKE (2000: 20–24), as *Callionymus* sp. by FRICKE (2002b: 11), and as *Callionymus* sp. (aff. *scaber* McCulloch, 1926) by FRICKE (2006: 4). SMNS material. – Distribution: NC: 1. Depth: 54–68 m. Marine species.

Callionymus brevianalis Fricke, 1983. – Taxonomy: First record from New Caledonia by FRICKE (1993: 364). MNHN and SMNS material. – Distribution: NC: 3, 5, [6], 7, 8, [9]. Depth: 1–40 m. Marine species.

Callionymus corallinus Gilbert, 1905. – Taxonomy: First record from New Caledonia by FRICKE (1993: 364). SMNS material. – Distribution: NC: 1, 6, [7], 8, [9], [10]. Depth: 12–58 m. Marine species.

Callionymus enneactis Bleeker, 1879. – Taxonomy: First record from New Caledonia by FRICKE (1983: 122–137); subsequently reported as *Paradiplogrammus* sp. by RIVATON et al. (1990: 30). NMNZ and SMNS material. – Distribution: NC: [1], 5, [6], [7], 8, [9], 10, 11, [12], 14. Depth: 0–15 m. Transitional water and marine.

**Callionymus kanakorum* Fricke, 2006. – Taxonomy: Originally described from New Caledonia by FRICKE (2006: 4–7); previously reported as *Callionymus japonicus* (non Houttuyn, 1782) by FOURMANOIR & RIVATON (1979: 417–418), as *Callionymus moretonensis* (non Johnson, 1971) by FRICKE (1981a: 359–360), and as ?*Bathycallionymus formosanus* (non Fricke, 1981) by RIVATON (1989: 145). MNHN and SMNS material. – Distribution: NC: 5, [6], [7], [8], [9], 10. Depth: 110–180 m. Marine species.

Callionymus keeleyi Fowler, 1941. – Taxonomy: First record from New Caledonia by FRICKE (1993: 368); previously reported as *Repomucenus virgis* (non Jordan & Fowler, 1903) by RIVATON et al. (1990: 31). MNHN and SMNS material. – Distribution: NC: 3, 6, 7, 8, [9], [10]. Depth: 2–70 m. Marine species.

Callionymus pleurostictus Fricke, 1982. – Taxonomy: First record from New Caledonia by FRICKE (1993: 368–369); previously reported as *Pseudocalliurichthys* sp. by RIVATON et al. (1990: 30). ROM and SMNS material. – Distribution: NC: 1, 5, 6, [7], 8, [9], 10, [11]. Depth: 0–42 m. Marine species.

**Callionymus rivatoni* Fricke, 1993. – Taxonomy: Originally described from New Caledonia as *Callionymus gardineri rivatoni* by FRICKE (1993: 365–368); previously reported as *Repomucenus huguenini* (non Bleeker, 1858–1859) by RIVATON (1989: 145), and as *Diplogrammus goramensis* (non Bleeker, 1858) by LABOUTE & GRANDPERRIN (2000: 400). MNHN and SMNS material. – Distribution: NC: 1, 3, 5, 6, [7], 8, 9, 10, 11, 12. Depth: 12–110 m. Marine species.

Callionymus simplicicornis Valenciennes in Cuvier & Valenciennes, 1837. – Taxonomy: First record from New Caledonia (Loyalty Islands) by FRICKE (2002a: 41). SMNS material. – Distribution: NC: 14. Depth: 0–40 m. Marine species.

**Callionymus tethys* Fricke, 1993. – Taxonomy: Originally described from New Caledonia by FRICKE (1993: 369–371). MNHN and SMNS material. – Distribution: NC: 3, 5, 6, [7], 8, [9], 10, 11, 12, 14. Depth: 10–55 m. Marine species.

Diplogrammus goramensis (Bleeker, 1858). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 30) and KULBICKI et al. (1994: 33). MNHN, SMNS and USNM material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], [11], [12], 14; AU: [17], 18. Depth: 0–34 m. Marine species.

**Protogrammus antipodus* Fricke, 2006. – Taxonomy: Originally described from New Caledonia (Loyalty Islands) by FRICKE (2006: 8–11). MNHN and SMNS material. – Distribution: NC: 14. Depth: 70–220 m. Marine species.

Synchiropus circularis Fricke, 1984. – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 33). – Distribution: NC: 1. Depth: 3–8 m. Marine species.

Synchiropus morrisoni Schultz in Schultz, Chapman, Lachner & Woods, 1960. – Taxonomy: First record from New Caledonia by KULBICKI et al. (1994: 33); subsequently reported as *Synchiropus ocellatus* (non Pallas, 1770) by LABOUTE & GRANDPERRIN (2000: 401). – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 8–33 m. Marine species.

**Synchiropus novaecaledoniae* Fricke, 1993. – Taxonomy: Originally described from New Caledonia (Jumeau Seamounts, Norfolk Ridge) by FRICKE (1993: 372–374). MNHN, NMNZ and SMNS material. – Distribution: NC: 13. Depth: 225–350 m. Marine species.

Synchiropus ocellatus (Pallas, 1770). – Taxonomy: First record from New Caledonia by FRICKE (1981b: 90–97); subsequently reported as *Synchiropus* sp. by LABOUTE & GRANDPERRIN (2000: 401). AMS, NMNZ and SMNS material. – Distribution: NC: [1], 6, [7], 8, 9, 10, 11, [12], 14. Depth: 0–30 m. Marine species.

**Synchiropus orstom* Fricke, 2000. – Taxonomy: Originally described from New Caledonia (Norfolk Ridge) by FRICKE (2000: 33–38). MNHN, NMNZ and SMNS material. – Distribution: NC: 13. Depth: 390–460 m. Marine species.

Synchiropus rameus (McCulloch, 1926). – Taxonomy: First record from New Caledonia as *Synchiropus (Orbonymus) rameus* by FRICKE (1983: 684–687). MNHN and SMNS material. – Distribution: NC: 1, 5, 6, [7], 8, [9], [10], 11, [12]. Depth: 23–75 m. Marine species.

**Synchiropus richeri* Fricke, 2000. – Taxonomy: Originally described from New Caledonia (Grande Terre) by FRICKE (2000: 39–41). MNHN and SMNS material. – Distribution: NC: [6], [7], 8, 9, [10]. Depth: 565 m. Marine species.

Synchiropus rubrovinctus (Gilbert, 1905). – Taxonomy: First record from New Caledonia (Loyalty Islands) by FRICKE (2006: 11). SMNS material. – Distribution: NC: 14. Depth: 25–130 m. Marine species.

Synchiropus sechellensis Regan, 1908. – Taxonomy: First record from New Caledonia by FRICKE (2000: 41–42). SMNS material. – Distribution: NC: 1, 3, 5, 6. Depth: 34–75 m. Marine species.

**Synchiropus signipinnis* Fricke, 2000. – Taxonomy: Originally described from New Caledonia (Chesterfield Islands) by FRICKE (2000: 43–45); previously reported as *Foetorepus altivelis* (non Temminck & Schlegel, 1845) by RIVATON (1989: 155), and as *Paradiplogrammus* sp. by KULBICKI et al. (1994: 33). MNHN and SMNS material. – Distribution: NC: 1. Depth: 348 m. Marine species.

Synchiropus splendidus (Herre, 1927). – Taxonomy: First record from New Caledonia by WHITLEY (1961: 65). AMS and SMNS material. – Distribution: NC: 5, [6], [7], 8, [9], 10, 11, [12]. Depth: 0–18 m. Marine species.

Synchiropus springeri Fricke, 1983. – Taxonomy: First record from New Caledonia by FRICKE (2000: 46–48); previously reported as *Synchiropus postulus* (non Smith, 1963) by RIVATON et al. (1990: 31), and as *Minysynchiropus laddi* (non

Schultz in Schultz, Chapman, Lachner & Woods, 1960) by KULBICKI & WILLIAMS (1997: 21). SMNS and USNM material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 3–35 m. Marine species.

Draconettidae

Centrodraco ornatus (Fourmanoir & Rivaton, 1979). – Taxonomy: Originally described from New Caledonia as *Draconetta ornata* by FOURMANOIR & RIVATON (1979: 418–419). Taxonomic decision of FRICKE (1992: 57). SMNS material. – Distribution: NC: 12, 13. Depth: 300–530 m. Marine species.

Draconetta xenica Jordan & Fowler, 1903. – Taxonomy: First record from New Caledonia by FRICKE (2002a: 71–72). SMNS material. – Distribution: NC: 12. Depth: 128–241 m. Marine species.

Rhyacichthyidae

**Protogobius attiti* Watson & Pöllabauer, 1998. – Taxonomy: Originally described from New Caledonia (Grande Terre) by WATSON & PÖLLABAUER (1998). AMS, BLIH, MNHN, NMW, ROM and SMF material. – Distribution: NC: 9. Depth: 0–5 m. Freshwater, transitional water and marine.

**Rhyacichthys guilberti* Dingerkus & Séret, 1992. – Taxonomy: Originally described from New Caledonia (Province Nord, Grande Terre) by DINGERKUS & SÉRET (1992c). MNHN material. – Distribution: NC: 7. Depth: 0–5 m. Freshwater, transitional water and marine.

Eleotridae

Bunaka gyrinoides (Bleeker, 1853) – Lochon tétard, lochon. – Taxonomy: First record from New Caledonia (Grande Terre) as *Oxyeleotris gyrinoides* by MARQUET et al. (1997: 30). – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–5 m. Freshwater, transitional water and marine.

Butis amboinensis (Bleeker, 1853) – Lochon. – Taxonomy: First record from New Caledonia (Grande Terre) by RIVATON et al. (1990: 40) and KULBICKI et al. (1993: 29). IRDNC material. – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–5 m. Freshwater, transitional water and marine.

Calumia godeffroyi (Günther, 1877). – Taxonomy: First record from New Caledonia (Loyalty Islands) by KULBICKI & WILLIAMS (1997: 21). IRDNC and USNM material. – Distribution: NC: 14. Depth: 7–30 m. Marine species.

Eleotris acanthopoma Bleeker, 1853 – Éléotris épineux, lochon; Bé (Paici). – Taxonomy: First record from New Caledonia by MARQUET et al. (2003: 200). AMS material. – Distribution: NC: 6, 7, 8, 9, 10, 14. Depth: 0–5 m. Freshwater, transitional water and marine.

Eleotris fusca (Bloch & Schneider [ex Forster], 1801) – Éléotris brun, lochon; Bé (Paici), Wai (Nengone, Maré). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 38) and THOLLOT (1996a: 13); previously reported as *Culius melanosoma* (non Bleeker, 1852) by WHITLEY (1961: 64). AMS, IRDNC and USNM material. – Distribution: NC: 6, 7, 8, 9, 10, 12, 14. Depth: 0–5 m. Freshwater, transitional water and marine.

Eleotris macrocephala (Bleeker, 1857). – Taxonomy: First record from New Caledonia (northern Grande Terre) by WEBER & BEAUFORT (1915: 33). – Distribution: NC: 7. Depth: 0–5 m. Marine species.

Eleotris melanosoma Bleeker, 1852 – Éléotris noir, lochon; Bé (Paici). – Taxonomy: First record from New Caledonia (Grande Terre) by WEBER & BEAUFORT (1915: 33). – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–5 m. Freshwater, transitional water and marine.

Giuris margaritacea (Valenciennes in Cuvier & Valenciennes, 1837) – Éléotris serpent; Pomè (Drubea), Amaéé (Paici). – Taxonomy: First record from New Caledonia as *Ophiocara aporos* by OGILBY (1898: 769), and as *Ophieleotris aporos* by MARQUET et al. (1997: 30). – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–5 m. Freshwater, transitional water and marine.

Hypseleotris guentheri (Bleeker, 1875) – Lochon. – Taxonomy: First record from New Caledonia (Grande Terre) as *Carassiops guentheri* by OGILBY (1898: 769). AMS material. – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–5 m. Freshwater, transitional water and marine.

Ophiocara porocephala (Valenciennes in Cuvier & Valenciennes, 1837) – Lochon, éléotris à tete poreuse; Pugö (Paici). – Taxonomy: First record from New Caledonia (Grande Terre) as *Eleotris porocephalus* by WEBER & BEAUFORT (1915: 32). IRDNC material. – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–5 m. Freshwater, transitional water and marine.

Oxyeleotris heterodon (Weber, 1907). – Taxonomy: First record from New Caledonia by WHITLEY (1961: 65). – Distribution: NC: [6], 8. Depth: 0–5 m. Freshwater, transitional water and marine.

Xenisthmidae

Xenisthmus eirospilus Gill & Hoese, 2004. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by FRICKE & KULBICKI (2006: 348); previously reported as *Xenisthmus* sp. by KULBICKI et al. (1994: 35). – Distribution: NC: 1; AU: 17. Depth: 2–15 m. Marine species.

Xenisthmus polyzonatus (Klunzinger, 1871). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 77) and KULBICKI et al. (1994: 35). IRDNC and SMNS material. – Distribution: NC: 1, [6], [7], 8, 9, 10. Depth: 1–12 m. Marine species.

Kraemeriidae

Kraemeria samoensis Steindachner, 1906. – Taxonomy: First record from New Caledonia (Loyalty Islands) by KULBICKI & WILLIAMS (1997: 22). SMNS and USNM material. – Distribution: NC: 14. Depth: 0–5 m. Marine species.

Gobiidae

**Amblyeleotris bellicauda* Randall, 2004. – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) by RANDALL (2004: 71–74). BPBM material (holotype). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 3 m. Marine species.

Amblyeleotris biguttata Randall, 2004. – Taxonomy: Recorded from New Caledonia in original description by RANDALL (2004: 66–68. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 11–50 m. Marine species.

Amblyeleotris diagonalis Polunin & Lubbock, 1979. – Taxonomy: First record from New Caledonia by RANDALL (2005a: 512); previously reported as *Amblyeleotris* sp. 1 by LABOUTE & GRANDPERRIN (2000: 405). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 6–40 m. Marine species.

Amblyeleotris fasciata (Herre, 1953). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 39) and Randall (2005a: 513); subsequently reported as *Amblyeleotris wheeleri* by Laboute & Grandperrin (2000: 405). – Distribution: NC: 5, [6], 7, 8, [9], [10], 14. Depth: 4–20 m. Marine species.

Amblyeleotris fontanesii (Bleeker, 1852). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 403, 404). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 3–28 m. Marine species.

Amblyeleotris guttata (Fowler, 1938). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 39) and Laboute & Grandperrin (2000: 404). IRDNC material. – Distribution: NC: 5, [6], 7, 8, [9], [10], 14. Depth: 10–40 m. Marine species.

**Amblyeleotris novaecaledoniae* Goren, 1981 – Gobie à bandes marrons. – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) by Goren (1981: 97–98); previously reported as *Amblyeleotris japonica* (non Takagi, 1957) by Fourmanoir & Laboute (1976: 140). MNHN material. – Distribution: NC: [6], [7], 8, [9], 10, 11. Depth: 3–20 m. Marine species.

Amblyeleotris ogasawarensis Yanagisawa, 1978. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 404); also reported as '*Amblyeleotris* sp. 6' and '*Amblyeleotris* sp. 7' by Laboute & Grandperrin (2000: 406). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 4–30 m. Marine species.

Amblyeleotris periophthalma (Bleeker, 1853). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 404); previously listed as *Amblyeleotris exilis* by Rivaton et al. (1990: 39). – Distribution: NC: 5, [6], 7, 8, [9], [10]. Depth: 5–35 m. Marine species.

Amblyeleotris randalli Hoese & Steene, 1978. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 405). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 25–50 m. Marine species.

Amblyeleotris rubrimarginata Mohlmann & Randall, 2002. – Taxonomy: Recorded from New Caledonia in original description by Mohlmann & Randall (2002: 216–219); previously reported as '*Amblyeleotris* sp. 9' by Laboute & Grandperrin (2000: 406). BPBM material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 10–12 m. Marine species.

Amblyeleotris steinitzi (Klausewitz, 1974). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 39) and Kulbicki et al. (1994: 33). IRDNC and USNM material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], 14. Depth: 1–43 m. Marine species.

**Amblyeleotris stenotaeniata* Randall, 2004. – Taxonomy: Originally described from New Caledonia (Grande Terre) by Randall (2004: 74); previously reported as '*Amblyeleotris* sp. 4' and '*Amblyeleotris* sp. 5' by Laboute & Grandperrin (2000: 406). BPBM material (holotype). – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 10–20 m. Marine species.

Amblygobius decussatus (Bleeker, 1855) – Gobie rose. – Taxonomy: First record from New Caledonia by Fourmanoir (1981: 27). IRDNC and SMNS material. – Distribution: NC: 1, 5, [6], 7, 8, [9], 10. Depth: 3–25 m. Marine species.

Amblygobius linki Herre, 1927. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 68). – Distribution: NC: [6], [7], [8], [9], 10. Depth: 1–10 m. Marine species.

Amblygobius nocturnus (Herre, 1945). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 40) and Thollot (1996a: 13). IRDNC and SMNS material. – Distribution: NC: 5, [6], 7, 8, [9], [10], [11], [12]; AU: 17. Depth: 1–30 m. Marine species.

Amblygobius phalaena (Valenciennes in Cuvier & Valenciennes, 1837) – Gobie à tâches blanches. – Taxonomy: First record from New Caledonia by Whitley (1961: 64); previously reported as *Amblygobius albimaculatus* (non Rüppell, 1830) by Rivaton et al. (1990: 40). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–52 m. Marine species.

Amblygobius sphynx (Valenciennes in Cuvier & Valenciennes, 1837). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 407); previously reported as *Amblygobius bynoensis* (non Richardson, 1844) by Fourmanoir & Laboute (1976: 139). IRDNC material. – Distribution: NC: 6, [7], 8, [9], 10. Depth: 0–15 m. Transitional water and marine.

Amblygobius stethophthalmus (Bleeker, 1851) – Gobie à grosse tête. – Taxonomy: First record from New Caledonia as *Amblygobius bynoensis* by Kulbicki et al. (1994: 33). – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 1–14 m. Transitional water and marine.

Amoya signatus (Peters, 1855). – Taxonomy: First record from New Caledonia as *Yongeichthys pavidus* by Rivaton et al. (1990: 42), Rivaton & Bourret (1999: 174), and Fricke & Kulbicki (2006: 352). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–3 m. Marine species.

Asterropteryx ensifera (Bleeker, 1874). – Taxonomy: First record from New Caledonia as *Asterropteryx ensiferus* by Rivaton et al. (1990: 40), Rivaton & Richer de Forges (1990: 28), and Kulbicki et al. (1994: 33). SMNS material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 1–40 m. Transitional water and marine.

Asterropteryx semipunctata Rüppell, 1830. – Taxonomy: First record from New Caledonia as *Asterropterix semipunctatus* by Whitley (1961: 64). AMS, SMNS and USNM material. – Distribution: NC: 5, [6], 7, 8, 9, 10, [11], 12; AU: 17. Depth: 0–12 m. Marine species.

Asterropteryx spinosa (Goren, 1981). – Taxonomy: Originally described from New Caledonia (Grande Terre) as *Oplopomus spinosus* by Goren (1981: 96–97). MNHN material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 3–15 m. Marine species.

Awaous guamensis (Valenciennes in Cuvier & Valenciennes, 1837) – Gobie de Guam, lochon; Bé (Paici). – Taxonomy: First record from New Caledonia as *Chonophorus guamensis* by Whitley (1961: 64); previously reported as *Trichopharynx crassilabris* by Ogilby (1898: 769–770). AMS, SMNS and USNM material. – Distribution: NC: 6, 7, 8, 9, 10, 12. Depth: 0–5 m. Freshwater, transitional water and marine.

Awaous ocellaris (Broussonet, 1782) – Gobie ocellé, lochon; Bé (Paici). – Taxonomy: First record from New Caledonia as *Gobius ocellaris* by Weber & Beaufort (1915: 38). MNHN material. – Distribution: NC: 7, 12. Depth: 0–5 m. Freshwater, transitional water and marine.

Barbuligobius sp. – Taxonomy: Reported from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 349). SMNS material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 60–90 m. Marine species.

Bathygobius coalitus (Bennett, 1832). – Taxonomy: First record from New Caledonia as *Bathygobius albopunctatus* by Goren (1988: 38–40). MNHN material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–3 m. Marine species.

Bathygobius cocosensis (Bleeker, 1854). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 33). SMNS material. – Distribution: NC: 1, [6], 7, 8, [9], [10]. Depth: 0–5 m. Marine species.

Bathygobius cotticeps (Steindachner, 1879). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 349). SMNS material. – Distribution: NC: [6], 7, 8, [9], 10, 14. Depth: 0–6 m. Marine species.

Bathygobius cyclopterus (Valenciennes in Cuvier & Valenciennes, 1837). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 33). SMNS material. – Distribution: NC: 1, [6], [7], 8, [9], [10], 14. Depth: 0–10 m. Marine species.

Bathygobius fuscus (Rüppell, 1830). – Taxonomy: First record from New Caledonia by Whitley (1961: 64); previously described as *Gobius caledonicus* by Sauvage (1880: 46), as *Gobius filamentosus* by Sauvage (1883: 157), and as *Drombus whitleyi* by Fowler (1931: 362). AMS, MNHN, SMNS and USNM material. – Distribution: NC: [6], [7], 8, 9, [10], [11], 12; AU: [17], 18. Depth: 0–6 m. Freshwater, transitional water and marine.

Bryaninops amplus Larson, 1985. – Taxonomy: First record from New Caledonia by Gabrié et al. (2007: 55); previously reported as *Cottogobius yongei* (non Davis & Cohen, 1969) by Fourmanoir & Laboute (1976: 140). – Distribution: NC: 5. Depth: 1–30 m. Marine species.

Bryaninops loki Larson, 1985. – Taxonomy: Recorded from New Caledonia (Grande Terre) in original description by Larson (1985: 81–85). AMS material. – Distribution: NC: [6], [7], 8, [9], [10], [11]; AU: 17. Depth: 6–45 m. Marine species.

Bryaninops natans Larson, 1985. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 408). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 7–12 m. Marine species.

Bryaninops ridens Smith, 1959. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 40). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 6–30 m. Marine species.

Bryaninops yongei (Davis & Cohen, 1969) – Gobie d'antipathaire. – Taxonomy: First record from New Caledonia by Rivaton & Bourret (1999: 172). – Distribution: NC: 5, [6], [7], 8, [9], 10. Depth: 3–45 m. Marine species.

Cabillus tongarevae (Fowler, 1927). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Kulbicki et al. (1994: 33). – Distribution: NC: 1. Depth: 1–9 m. Marine species.

Callogobius hasseltii (Bleeker, 1851). – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 139); subsequently listed as *Callogobius plumatus* (non Smith, 1959) by Rivaton et al. (1990: 40). SMNS material. – Distribution: NC: [6], [7], 8, 9, [10]. Depth: 0–8 m. Freshwater, transitional water and marine.

Callogobius maculipinnis (Fowler, 1918). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 33); previously listed as *Callogobius irrasus* and as *Intosagobius kuderi* by Rivaton et al. (1990: 40, 41). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [6], 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 3–37 m. Marine species.

Callogobius sclateri (Steindachner, 1879). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 40). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [6], 7, 8, [9], [10], 14. Depth: 1–37 m. Marine species.

Cryptocentrus fasciatus (Playfair in Playfair & Günther, 1867). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 408). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–20 m. Marine species.

Cryptocentrus leptocephalus Bleeker, 1876. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 349); previously reported as *Cryptocentrus lutheri* (non Klausewitz, 1960) by Goren (1981: 99). SMNS material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 0–18 m. Marine species.

Cryptocentrus leucostictus (Günther, 1871). – Taxonomy: **New record** from New Caledonia (southwestern lagoon, Grande Terre), based on three specimens observed at Nouméa by M. Kulbicki in 1997. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–15 m. Marine species.

Cryptocentrus strigilliceps (Jordan & Seale, 1906). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 40) and Kulbicki et al. (1994: 33). IRDNC and SMNS material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], 14. Depth: 1–15 m. Marine species.

Ctenogobiops aurocingulus (Herre, 1935). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 409); previously reported as *Ctenogobiops* sp. by Rivaton et al. (1990: 40). SMNS material. – Distribution: NC: 1, 5, [6], 7, 8, 9, [10]. Depth: 2–44 m. Marine species.

Ctenogobiops feroculus Lubbock & Polunin, 1977. – Taxonomy: Originally described from New Caledonia by Lubbock & Polunin (1977: 509). BMNH and SMNS material. – Distribution: NC: 5, [6], 7, 8, [9], 10, 14. Depth: 1–20 m. Marine species.

Ctenogobiops maculosus (Fourmanoir, 1955). – Taxonomy: First record from New Caledonia (northeastern Grande Terre) as *Ctenogobiops crocineus* by Evans (2006: 112). – Distribution: NC: 5, [6], 7, [8], [9], [10]. Depth: 6–20 m. Marine species.

Ctenogobiops pomastictus Lubbock & Polunin, 1977. – Taxonomy: First record from New Caledonia by Randall et al. (2003: 511–512). SMNS material. – Distribution: NC: 5, [6], 7, 8, 9, [10]. Depth: 0–15 m. Marine species.

Ctenotrypauchen microcephalus (Bleeker, 1860). – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 76) and Kulbicki & Wantiez (1990: 124). – Distribution: NC: [6], [7], 8, 9, [10]. Depth: 0–10 m. Transitional water and marine.

Drombus triangularis (Weber, 1909). – Taxonomy: First record from New Caledonia as *Acentrogobius bontii* by Fourmanoir (1981: 27). IRDNC material. – Distribution: NC: [6], [7], [8], [9], 10. Depth: 0–10 m. Freshwater, transitional water and marine.

Eviota afelei Jordan & Seale, 1906. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 22). IRDNC, SMNS and USNM material. – Distribution: NC: [6], [7], [8], [9], [10], [11], 12, 14. Depth: 0–116 m. Marine species.

Eviota bifasciata Lachner & Karnella, 1980. – Taxonomy: **New record** from New Caledonia (southwestern lagoon, Grande Terre), based on five specimens observed at Nouméa by M. Kulbicki in 1997. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Eviota cometa Jewett & Lachner, 1983. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 34). SMNS and USNM material. – Distribution: NC: 1, 14. Depth: 0–70 m. Marine species.

Eviota distigma Jordan & Seale, 1906. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 137). SMNS and USNM material. – Distribution: NC: 1, [6], [7], 8, [9], [10], [11], 12, 14. Depth: 0–8 m. Marine species.

Eviota fasciola Karnella & Lachner, 1981. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 22). IRDNC, SMNS and USNM material. – Distribution: NC: 9, 14. Depth: 0–5 m. Marine species.

Eviota guttata Lachner & Karnella, 1978. – Taxonomy: First record from New Caledonia by Gabrié et al. (2007: 140); also reported as *Eviota albolineata* (non Jewett & Lachner, 1983) by Kulbicki & Williams (1997: 22). IRDNC and USNM material. Taxonomic decision of Greenfield & Randall (2010: 286–287). – Distribution: NC: 5, 14; AU: 17. Depth: 0–15 m. Marine species.

Eviota herrei Jordan & Seale, 1906. – Taxonomy: First record from New Caledonia (southeastern Grande Terre) by Fricke & Kulbicki (2006: 350). SMNS material. – Distribution: NC: [6], [7], [8], 9, [10]. Depth: 0–6 m. Marine species.

Eviota hoesei Gill & Jewett, 2004. – Taxonomy: Recorded from New Caledonia in original description by Gill & Jewett (2004: 236–238). SMNS and USNM material. – Distribution: NC: 8, 9, 10, [11], 12; AU: 17, 18. Depth: 0–6 m. Marine species.

Eviota latifasciata Jewett & Lachner, 1983. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 22). IRDNC and USNM material. – Distribution: NC: 14. Depth: 0–35 m. Marine species.

Eviota melasma Lachner & Karnella, 1980. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 22). IRDNC and USNM material. – Distribution: NC: 14. Depth: 0–44 m. Marine species.

Eviota monostigma Fourmanoir, 1971. – Taxonomy: Originally described from New Caledonia by Fourmanoir (1971c: 498). MNHN, SMNS and USNM material. – Distribution: NC: 1, [6], 7, 8, [9], [10], [11], 12, 14. Depth: 0–8 m. Marine species.

Eviota nebulosa Smith, 1958. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 40) and Fricke & Kulbicki (2006: 350). SMNS and USNM material. – Distribution: NC: [6], 7, [8], [9], [10], [11], 12. Depth: 0–18 m. Marine species.

Eviota nigriventris Giltay, 1933. – Taxonomy: First record from New Caledonia by Goren (1982); subsequently reported as *Eviota* sp. by Laboute & Grandperrin (2000: 410). MNHN and SMNS material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], 14. Depth: 0–150 m. Marine species.

Eviota pellucida Larson, 1976. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 409). SMNS material. – Distribution: NC: 5, [6], 7, 8, [9], [10], 14. Depth: 0–30 m. Marine species.

Eviota prasina (Klunzinger, 1871). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 40) and Kulbicki & Williams (1997: 22). SMNS material. – Distribution: NC: [6], 7, 8, [9], 10, [11], [12], 14; AU: 17, 18. Depth: 0–65 m. Marine species.

Eviota prasites Jordan & Seale, 1906. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 34). USNM material. – Distribution: NC: 1, 5, 14. Depth: 0–30 m. Marine species.

Eviota pseudostigma Lachner & Karnella, 1980. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 22). USNM material. – Distribution: NC: 14. Depth: 0–27 m. Marine species.

Eviota punctulata Jewett & Lachner, 1983. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 350). SMNS material. – Distribution: NC: [7], 9, 14. Depth: 0–29 m. Marine species.

Eviota queenslandica Whitley, 1932. – Taxonomy: First record from New Caledonia by Evans (2006: 112). SMNS and USNM material. – Distribution: NC: [6], 7, 8, [9], [10], 14. Depth: 0–12 m. Marine species.

Eviota sebreei Jordan & Seale, 1906. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 138). SMNS material. – Distribution: NC: 5, [6], 7, 8, [9], [10], 14. Depth: 0–40 m. Marine species.

Eviota smaragdus Jordan & Seale, 1906. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 138). SMNS material. – Distribution: NC: [6], 7, 8, [9], [10], [11], [12]; AU: [17], 18. Depth: 0–17 m. Marine species.

Eviota sparsa Jewett & Lachner, 1983. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 34). USNM material. – Distribution: NC: 1, 14. Depth: 0–37 m. Marine species.

Eviota zebrina Lachner & Karnella, 1978. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 22). SMNS and USNM material. – Distribution: NC: 14. Depth: 0–26 m. Marine species.

Eviota zonura Jordan & Seale, 1906. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 22). IRDNC, SMNS and USNM material. – Distribution: NC: [6], 7, 8, [9], [10], 14. Depth: 0–12 m. Marine species.

Exyrias belissimus (Smith, 1959). – Taxonomy: First record from New Caledonia as *Exyrias bellissimus* by Laboute & Grandperrin (2000: 69); also reported as 'Gobiidae indéterminé 1' by Laboute & Grandperrin (2000: 417). IRDNC and SMNS material. – Distribution: NC: 6, 7, 8, 9, [10]. Depth: 0–20 m. Marine species.

Exyrias puntang (Bleeker, 1851) – Gobie à grandes nageoires. – Taxonomy: First record from New Caledonia by Thollot

& KULBICKI (1988: 618); previously described as *Gobius Canalae* by SAUVAGE (1881: 102). MNHN material. – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 0–3 m. Transitional water and marine.

Favonigobius reichei (Bleeker, 1853). – Taxonomy: First record from New Caledonia as *Acentrogobius reichei* by PLESSIS & FOURMANOIR (1966c: 139). USNM material. This may be a separate, undescribed species, endemic to New Caledonia. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–6 m. Freshwater, transitional water and marine.

Fusigobius duospilus Hoese & Reader, 1985. – Taxonomy: First record from New Caledonia (Loyalty Islands) as *Coryphopterus duospilus* by KULBICKI & WILLIAMS (1997: 22). IRDNC material. – Distribution: NC: [1], 14; AU: 17. Depth: 0–42 m. Marine species.

Fusigobius gracilis (Randall, 2001). – Taxonomy: Recorded from New Caledonia in original description as *Coryphopterus gracilis* by RANDALL (2001: 208–212); previously reported as '*Fusigobius* sp. 1' by KULBICKI et al. (1994: 34). BPBM, ROM and USNM material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 1–18 m. Marine species.

Fusigobius humeralis (Randall, 2001). – Taxonomy: Recorded from New Caledonia in original description as *Coryphopterus humeralis* by RANDALL (2001: 212–215). BPBM material. – Distribution: NC: [6], [7], 8, 9, [10]. Depth: 3–30 m. Marine species.

Fusigobius inframaculatus Randall, 1994. – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by EVANS (2006: 112); also reported as *Fusigobius longispinus* (non Goren, 1978) by FRICKE & KULBICKI (2006: 350). – Distribution: NC: [6], 7, [8], [9], [10], [11], 12. Depth: 2–30 m. Marine species.

Fusigobius maximus (Randall, 2001). – Taxonomy: Recorded from New Caledonia in original description as *Coryphopterus maximus* by RANDALL (2001: 215–218); previously reported as '*Fusigobius* sp. 2' by KULBICKI et al. (1994: 34). ASIZP, BPBM, MNHN, NSMT, ROM and SMNS material. – Distribution: NC: 1, [6], [7], 8, [9], 10. Depth: 0–21 m. Marine species.

Fusigobius melacron (Randall, 2001). – Taxonomy: First record from New Caledonia by GABRIÉ et al. (2007: 55). – Distribution: NC: 5. Depth: 7–30 m. Marine species.

Fusigobius neophytus (Günther, 1877) – Gobie des sables. – Taxonomy: First record from New Caledonia as *Fusigobius neophitus* by PLESSIS & FOURMANOIR (1966c: 139). IRDNC and SMNS material. – Distribution: NC: 1, 5, [6], [7], 8, [9], 10, [11], 12, 14; AU: 17. Depth: 0–25 m. Marine species.

Fusigobius pallidus (Randall, 2001). – Taxonomy: Recorded from New Caledonia in original description as *Coryphopterus pallidus* by RANDALL (2001: 221–224); previously reported as '*Fusigobius* sp. 3' by KULBICKI et al. (1994: 34). BPBM and USNM material. – Distribution: NC: 1. Depth: 10–48 m. Marine species.

Fusigobius signipinnis Hoese & Obika, 1988. – Taxonomy: First record from New Caledonia by GABRIÉ et al. (2007: 55). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 1–25 m. Marine species.

Gladiogobius sp. – Taxonomy: Record from New Caledonia, based on BPBM uncat. (1 specimen, Nouméa), identified by J. E. RANDALL (personal comunication, 22 Aug. 2007). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–3 m. Marine species.

**Glossogobius* sp. – Taxonomy: Reported from New Caledonia (Grande Terre) as *Glossogobius celebius* (non Valenciennes in Cuvier & Valenciennes, 1837) by WHITLEY (1961: 64), as *Glossogobius* sp. by LABOUTE & GRANDPERRIN (2000: 69), and as '*Glossogobius* cf. *celebius*' by MARQUET et al. (2003: 222). AMS material. – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–3 m. Freshwater, transitional water and marine.

Glossogobius giuris (Hamilton, 1822). – Taxonomy: First record from New Caledonia (Grande Terre) as *Gobius giuris* by WEBER & BEAUFORT (1915: 37). – Distribution: NC: 6, [7], 8, [9], [10]. Depth: 0–3 m. Freshwater, transitional water and marine.

Gnatholepis anjerensis (Bleeker, 1851). – Taxonomy: First record from New Caledonia by WHITLEY (1961: 64); subsequently reported as *Gnatholepis* sp. by KULBICKI et al. (1994: 34). AMS, BPBM, IRDNC and SMNS material. – Distribution: NC: 1, 5, [6], [7], 8, 9, [10], [11], [12], 14; AU: 17. Depth: 0–26 m. Transitional water and marine.

Gnatholepis cauerensis (Bleeker, 1853). – Taxonomy: First record from New Caledonia by GOREN (1981: 99–100); subsequently reported as *Gnatholepis scapulostigma* by RIVATON et al. (1990: 40). MNHN, SMNS and USNM material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–30 m. Marine species.

Gobiodon acicularis Harold & Winterbottom, 1995. – Taxonomy: First record from New Caledonia (Loyalty Islands) by FRICKE & KULBICKI (2006: 350). SMNS material. – Distribution: NC: 14. Depth: 0–10 m. Marine species.

Gobiodon axillaris De Vis, 1884. – Taxonomy: First record from New Caledonia by EVANS (2006: 112). SMNS material. – Distribution: NC: [6], 7, 8, [9], [10], 14. Depth: 0–20 m. Marine species.

Gobiodon brochus Harold & Winterbottom, 1999. – Taxonomy: Recorded from New Caledonia in original description by HAROLD & WINTERBOTTOM (1999: 50–56). ROM material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–31 m. Marine species.

Gobiodon citrinus (Rüppell, 1838). – Taxonomy: First record from New Caledonia by PLESSIS & FOURMANOIR (1966c: 138). AMS, IRDNC and USNM material. – Distribution: NC: 1, 6, 7, 8, [9], [10], 14. Depth: 0–15 m. Marine species.

Gobiodon histrio (Valenciennes in Cuvier & Valenciennes, 1837). – Taxonomy: First record from New Caledonia by EVANS (2006: 112). IRDNC and USNM material. – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 0–15 m. Marine species.

Gobiodon multilineatus Wu, 1979. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 41), RIVATON & RICHER DE FORGES (1990: 28, 62), and KULBICKI et al. (1994: 34). IRDNC material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 8–66 m. Marine species.

Gobiodon okinawae Sawada, Arai & Abe, 1972. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 41) and KULBICKI et al. (1994: 34). AMS, IRDNC and SMNS material. – Distribution: NC: 1, 5, [6], 7, 8, [9], 10, 14. Depth: 0–15 m. Marine species.

Gobiodon quinquestrigatus (Valenciennes in Cuvier & Valenciennes, 1837). – Taxonomy: First record from New

Caledonia by RIVATON et al. (1990: 41), RIVATON & RICHER DE FORGES (1990: 28, 62), and KULBICKI et al. (1994: 34). IRDNC and SMNS material. – Distribution: NC: 1, [6], 7, 8, [9], [10]. Depth: 1–70 m. Marine species.

Gobiodon rivulatus (Rüppell, 1830). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 41) and KULBICKI et al. (1994: 34). USNM material. – Distribution: NC: 1, [6], 7, 8, [9], [10], 14. Depth: 0–78 m. Freshwater, transitional water and marine.

Gobiodon unicolor (Castelnau, 1873). – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by EVANS (2006: 112). – Distribution: NC: [6], 7, [8], [9], [10]. Depth: 0–15 m. Transitional water and marine.

Gobiopsis exigua Lachner & McKinney, 1979. – Taxonomy: **New record** from New Caledonia (Loyalty Islands), based on USNM 319811 (2 specimens, Ouvéa). – Distribution: NC: 14. Depth: 8–40 m. Marine species.

Gobiopsis malekulae (Herre, 1935). – Taxonomy: First record from New Caledonia by FRICKE & KULBICKI (2006: 351). SMNS material. – Distribution: NC: 14. Depth: 10–120 m. Marine species.

Hemigobius hoevenii (Bleeker, 1851). – Taxonomy: First record from New Caledonia as *Gobius hoevenii* by WEBER & BEAUFORT (1915: 38–39). – Distribution: NC: 7. Depth: 0–5 m. Freshwater, transitional water and marine.

Hetereleotris sp. – Taxonomy: Reported from New Caledonia by FRICKE & KULBICKI (2006: 351). SMNS material. – Distribution: NC: 14. Depth: 0–4 m. Marine species.

Istigobius decoratus (Herre, 1927). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 41) and KULBICKI et al. (1993: 29). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], 12, 14; AU: 17. Depth: 0–20 m. Marine species.

Istigobius goldmanni (Bleeker, 1852). – Taxonomy: First record from New Caledonia by EVANS (2006: 112). SMNS and USNM material. – Distribution: NC: 5, [6], 7, 8, [9], [10]. Depth: 0–10 m. Marine species.

Istigobius nigroocellatus (Günther, 1873). – Taxonomy: First record from New Caledonia by RANDALL (2005a: 539); previously reported as *Istigobius* sp. by LABOUTE & GRANDPERRIN (2000: 412). IRDNC and USNM material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Istigobius ornatus (Rüppell, 1830) – Gobie orné. – Taxonomy: First record from New Caledonia by WHITLEY (1961: 64); subsequently reported as '*Istigobius ou natus*' by EVANS (2006: 112). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: [6], 7, 8, 9, [10], [11], 12. Depth: 0–5 m. Marine species.

Istigobius rigilius (Herre, 1953). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 41) and KULBICKI et al. (1994: 34); subsequently reported as *Istigobius regilius* by LABOUTE & GRANDPERRIN (2000: 412). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, [6], 7, 8, [9], 10, 14. Depth: 0–30 m. Marine species.

Istigobius spence (Smith, 1947). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 41) and THOLLOT (1996a: 13); previously reported as *Acentrogobius aestuarius* by FOURMANOIR (1981: 27). MNHN and USNM material. – Distribution: NC: [6], 7, 8, [9], 10. Depth: 0–12 m. Transitional water and marine.

"Koumansetta" hectori (Smith, 1957). – Taxonomy: First record from New Caledonia as *Amblygobius hectori* by RIVATON et al. (1990: 40). Use of genus name out of an unpublished thesis needs to be approved. IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 5–20 m. Marine species.

"Koumansetta" rainfordi Whitley, 1940. – Taxonomy: First record from New Caledonia as *Amblygobius rainfordi* by RIVATON et al. (1990: 40) and LABOUTE & GRANDPERRIN (2000: 407). Use of genus name out of an unpublished thesis needs to be approved. IRDNC and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 14. Depth: 1–30 m. Marine species.

Lentipes kaaea Watson, Keith & Marquet, 2002 – Nez rouge calédonien. – Taxonomy: Originally described from New Caledonia (Province Nord, Grande Terre) by WATSON et al. (2002: 176). MNHN material. – Distribution: NC: 7. Depth: 0–5 m. Freshwater, transitional water and marine.

Lubricogobius exiguus Tanaka, 1915. – Taxonomy: First record from New Caledonia by RANDALL & SENOU (2001: 7–9, questionable) and RANDALL (2005a: 541). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 5–100 m. Marine species.

Lubricogobius ornatus Fourmanoir, 1966. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 41) and RANDALL & SENOU (2001: 9–11). BPBM material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 17–79 m. Marine species.

Macrodontogobius wilburi Herre, 1936. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 41) and KULBICKI et al. (1994: 34). IRDNC and USNM material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–20 m. Marine species.

Mahidolia mystacina (Valenciennes in Cuvier & Valenciennes, 1837). – Taxonomy: First record from New Caledonia by LABOUTE & GRANDPERRIN (2000: 412); previously reported as *Mahidolia duque* by RIVATON et al. (1990: 41). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 5–20 m. Marine species.

Mugilogobius mertoni (Weber, 1911). – Taxonomy: First record from New Caledonia by LARSON (2001: 143–150). MNHN and USNM material. – Distribution: NC: 7, 9. Depth: 0–5 m. Freshwater, transitional water and marine.

Mugilogobius notospilus (Günther, 1877). – Taxonomy: First record from New Caledonia by LARSON (2001: 154–159); previously reported as *Stigmatogobius duospilus* by FOWLER (1953: 387–388). ANSP material. – Distribution: NC: 6. Depth: 0–5 m. Freshwater, transitional water and marine.

Oplopomus diacanthus Schultz, 1943. – Taxonomy: First record from New Caledonia as *Opua atherinoides* (Peters, 1855) by GABRIÉ et al. (2007: 140). – Distribution: NC: 5. Depth: 1–15 m. Marine species.

Oplopomus caninoides (Bleeker, 1852). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 41), RIVATON & RICHER DE FORGES (1990: 28), and THOLLOT (1996a: 13). IRDNC and SMNS material. – Distribution: NC: [6], [7], 8, 9, [10]. Depth: 1–66 m. Marine species.

Oplopomus oplopomus (Valenciennes in Cuvier & Valenciennes, 1837). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 41) and THOLLOT (1996a:

13). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], 10. Depth: 1–30 m. Marine species.

Oxyurichthys ophthalmonema (Bleeker, 1856–1857). – Taxonomy: First record from New Caledonia (Grande Terre) as *Oxyurichthys tentacularis* by Rivaton et al. (1990: 41) and Kulbicki & Wantiez (1990: 124). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–30 m. Transitional water and marine.

Oxyurichthys papuensis (Valenciennes in Cuvier & Valenciennes, 1837). – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 41) and Kulbicki & Wantiez (1990: 124); subsequently reported as *Oxyurichthys* sp. by Laboute & Grandperrin (2000: 413). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–50 m. Transitional water and marine.

Paragobiodon echinocephalus (Rüppell, 1830). – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS, IRDNC and SMNS material. – Distribution: NC: 1, 5, [6], [7], 8, 9, [10]. Depth: 0–47 m. Marine species.

Paragobiodon lacunicolus (Kendall & Goldsborough, 1911). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 41) and Kulbicki et al. (1994: 34). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, [6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–80 m. Marine species.

Paragobiodon melanosomus (Bleeker, 1852). – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 22). IRDNC and USNM material. – Distribution: NC: [6], 7, [8], [9], [10], 14. Depth: 0–30 m. Marine species.

Paragobiodon modestus (Regan, 1908). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 351). AMS, IRDNC and SMNS material. – Distribution: NC: [1], [6], 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–9 m. Marine species.

Paragobiodon xanthosomus (Bleeker, 1852). – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 22). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 14; AU: 17. Depth: 0–70 m. Marine species.

Periophthalmus argentilineatus Valenciennes in Cuvier & Valenciennes, 1837. – Taxonomy: First record from New Caledonia (Grande Terre) by Marquet et al. (1997: 30); previously reported as *Periophthalmus koelreuteri* (non Pallas, 1770) by Ogilby (1898: 770), and as *Periophthalmus vulgaris* by Rivaton et al. (1990: 41). IRDNC material. – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–1 m. Freshwater, transitional water and marine.

Pleurosicya bilobata (Koumans, 1941). – Taxonomy: First record from New Caledonia by Myers (1999: 258); previously described as *Pleurosicya taisnei* by Plessis & Fourmanoir (1966a). MNHN and SMNS material. – Distribution: NC: [6], [7], 8, [9], [10], [11], 12. Depth: 0–10 m. Transitional water and marine.

Pleurosicya coerulea Larson, 1990. – Taxonomy: First record from New Caledonia by Randall (2005a: 546). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 3–20 m. Marine species.

Pleurosicya micheli Fourmanoir, 1971. – Taxonomy: Originally described from New Caledonia by Fourmanoir (1971c: 499–500). SMNS material. – Distribution: NC: 5, [6], [7], 8, [9], [10], 14. Depth: 1–38 m. Marine species.

Pleurosicya mossambica Smith, 1959. – Taxonomy: First record from New Caledonia (Grande Terre) by Larson (1990: 32–36). AMS material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–30 m. Marine species.

Priolepis cinctus (Regan, 1908) – Gobie noble. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 41) and as *Priolepis cincta* by Rivaton & Richer de Forges (1990: 28) and Kulbicki et al. (1993: 29); previously reported as *Quisquilius eugenius* (non Jordan & Evermann, 1903) by Plessis & Fourmanoir (1966c: 139), and as *Priolepis naraharae* by Rivaton et al. (1990: 41). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [6], [7], 8, 9, [10], 14. Depth: 0–78 m. Transitional water and marine.

Priolepis compita Winterbottom, 1985. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 22). SMNS and USNM material. – Distribution: NC: 14. Depth: 0–45 m. Marine species.

Priolepis fallacincta Winterbottom & Burridge, 1992. – Taxonomy: First record from New Caledonia by Aonuma et al. (1996: 326–327). SMNS and USNM material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 0–37 m. Marine species.

Priolepis inhaca (Smith, 1949). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 351). SMNS material. – Distribution: NC: 14. Depth: 0–26 m. Marine species.

Priolepis kappa Winterbottom & Burridge, 1993. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 27). USNM material. – Distribution: NC: 14. Depth: 0–20 m. Marine species.

Priolepis semidoliata (Valenciennes in Cuvier & Valenciennes, 1837). – Taxonomy: First record from New Caledonia as *Priolepis semidoliatus* by Rivaton et al. (1990: 41) and Kulbicki & Williams (1997: 22). SMNS and USNM material. – Distribution: NC: [6], [7], 8, 9, [10], 14. Depth: 0–30 m. Marine species.

Priolepis squamogena Winterbottom & Burridge, 1989. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 351). SMNS material. – Distribution: NC: [1], 14; AU: 17. Depth: 0–4 m. Marine species.

Psammogobius biocellatus (Valenciennes in Cuvier & Valenciennes, 1837) – Gobie à deux taches, lochon; Bé (Paici). – Taxonomy: First record from New Caledonia (Grande Terre) as *Glossogobius biocellatus* by Rivaton et al. (1990: 40) and Kulbicki & Wantiez (1990: 124). IRDNC material. – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–3 m. Transitional water and marine.

Redigobius balteatus (Herre, 1935). – Taxonomy: First record from New Caledonia (Grande Terre) by Marquet et al. (1997: 30). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–5 m. Freshwater, transitional water and marine.

Redigobius bikolanus (Herre, 1927). – Taxonomy: First record from New Caledonia (Grande Terre) by Marquet et al. (1997: 30). MNHN material. – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–5 m. Freshwater, transitional water and marine.

Redigobius chrysosoma (Bleeker, 1875). – Taxonomy: First record from New Caledonia (Grande Terre) by Marquet et al. (1997: 30); previously reported as *Gobius* sp. by Weber & Beaufort (1915: 39). – Distribution: NC: [6], [7], 8,

[9], [10]. Depth: 0–5 m. Freshwater, transitional water and marine.

Redigobius tambujon (Bleeker, 1854). – Taxonomy: First record from New Caledonia as *Redigobius roemeri* by Marquet et al. (1997: 30). – Distribution: NC: 7. Depth: 0–5 m. Freshwater, transitional water and marine.

**Schismatogobius fuligimentus* Chen, Séret, Pöllabauer & Shao, 2001. – Taxonomy: Originally described from New Caledonia (Grande Terre) by Chen et al. (2001: 143–145); previously reported as *Schismatogobius* n. sp. by Marquet et al. (1997: 30). – Distribution: NC: 8, 10. Depth: 0–5 m. Freshwater, transitional water and marine.

Sicyopterus lagocephalus (Pallas, 1770) – Sicyoptère à bec de lièvre, lochon; Dangem (Fwai, Nemi), Èréé (Paici), Saleek (Pije). – Taxonomy: First record from New Caledonia (Grande Terre) by Laboute & Grandperrin (2000: 62). – Distribution: NC: 6, 7, 8, 9, 10. Depth: 0–5 m. Freshwater, transitional water and marine.

**Sicyopterus sarasini* Weber & Beaufort, 1915 – Sicyoptère de Sarasin, lochon; Dangem (Fwai, Jawe, Nemi), Èréé (Paici), Saleek (Pije). – Taxonomy: Originally described from New Caledonia (Grande Terre) by Weber & Beaufort (1915: 40). AMS, NMBA and ZMA material. – Distribution: NC: 7, 9. Depth: 0–5 m. Freshwater, transitional water and marine.

**Sicyopus chloe* Watson, Keith & Marquet, 2001 – Sicyopus de Chloe; Dangem (Fwai, Jawe, Nemi), Èréé (Paici), Saleek (Pije). – Taxonomy: Originally described from New Caledonia (Grande Terre) by Watson et al. (2001); previously reported as *Sicyopus* sp. n. by Marquet et al. (1997: 30). BPBM, MNHN, SMF and UF material. – Distribution: NC: 7. Depth: 0–5 m. Freshwater, transitional water and marine.

Sicyopus pentecost Keith, Lord & Taillebois, 2010 – Sicyopus de Pentecost. – Taxonomy: Recorded from New Caledonia (Îles Bélep) by Keith et al. (2010: 305–308). MNHN material. – Distribution: NC: 5. Depth: 0–5 m. Freshwater, transitional water and marine.

Sicyopus zosterophorum (Bleeker, 1857) – Lochon; Dangem (Fwai, Jawe, Nemi), Èréé (Paici), Saleek (Pije). – Taxonomy: First record from New Caledonia (Grande Terre) by Marquet et al. (2003: 240). – Distribution: NC: 7. Depth: 0–5 m. Freshwater, transitional water and marine.

**Stenogobius yateiensis* Keith, Watson & Marquet, 2002 – Gobie de Yaté, lochon. – Taxonomy: Originally described from New Caledonia (Grande Terre) by Keith et al. (2002: 190); previously reported as *Gobius genivittatus* (non Valenciennes in Cuvier & Valenciennes, 1837) by Weber & Beaufort (1913: 174), as '*Stenogobius* sp. n.?' by Marquet et al. (1997: 31), and as *Stenogobius* sp. by Laboute & Grandperrin (2000: 63). MNHN material. – Distribution: NC: 7, 9. Depth: 0–5 m. Freshwater, transitional water and marine.

Stiphodon atratus Watson, 1996 – Stiphodon noir. – Taxonomy: First record from New Caledonia (Grande Terre) by Marquet et al. (2003: 244). – Distribution: NC: 7. Depth: 0–5 m. Freshwater, transitional water and marine.

Stiphodon mele Keith, Marquet & Pouilly, 2009. – Taxonomy: Originally described from New Caledonia (Grande Terre) by Keith et al. (2009: 473). MNHN material. – Distribution: NC: 6. Depth: 0–5 m. Freshwater, transitional water and marine.

Stiphodon rutilaureus Watson, 1996 – Stiphodon rouge doré. – Taxonomy: First record from New Caledonia (Grande Terre) by Marquet et al. (2003: 246); previously reported as *Stiphodon elegans* (non Steindachner, 1880) by Weber & Beaufort (1913: 174), and as '*Stiphodon* sp. n.?' by Marquet et al. (1997: 31). AMS material. – Distribution: NC: 7. Depth: 0–5 m. Freshwater, transitional water and marine.

**Stiphodon sapphirinus* Watson, Keith & Marquet, 2005 – Stiphodon saphir. – Taxonomy: Originally described from New Caledonia (Grande Terre) by Watson et al. (2005); previously reported as *Stiphodon semoni* (non Weber, 1895) by Laboute & Grandperrin (2000: 63), and as *Stiphodon* sp. by Marquet et al. (2003: 248). MNHN, SMF and UF material. – Distribution: NC: 7, 9. Depth: 0–5 m. Freshwater, transitional water and marine.

Stonogobiops yasha Yoshino & Shimada, 2001. – Taxonomy: First record from New Caledonia by Randall (2005a: 551); previously reported as *Stonogobiops* sp. by Rivaton et al. (1990: 42). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 15–40 m. Marine species.

Sueviota lachneri Winterbottom & Hoese, 1988. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 22). USNM material. – Distribution: NC: 14. Depth: 1–30 m. Marine species.

Taenioides cirratus (Blyth, 1860). – Taxonomy: First record from New Caledonia (Grande Terre) by Marquet et al. (1997: 31). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–6 m. Freshwater, transitional water and marine.

Tomiyamichthys oni (Tomiyama, 1936). – Taxonomy: First record from New Caledonia as *Tomiyamichthys ono* by Gabrié et al. (2007: 55); previously reported as 'Gobiidae indéterminé 5' by Laboute & Grandperrin (2000: 417), and as *Tomiyamichthys* sp. by Fricke & Kulbicki (2006: 351). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 5–25 m. Marine species.

Trimma benjamini Winterbottom, 1996. – Taxonomy: Recorded from New Caledonia in original description by Winterbottom (1996: 60). SMNS and USNM material. – Distribution: NC: [6], 7, 8, [9], [10], 14. Depth: 0–90 m. Marine species.

Trimma caesiura Jordan & Seale, 1906. – Taxonomy: First record from New Caledonia as *Trima caesiura* by Plessis & Fourmanoir (1966c: 138). SMNS and USNM material. – Distribution: NC: 1, [6], 7, 8, [9], [10], [11], 12, 14; AU: 17. Depth: 0–70 m. Marine species.

Trimma emeryi Winterbottom, 1985. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 351–352). SMNS material. – Distribution: NC: 1, [6], [7], [8], [9], [10], [11], 12. Depth: 0–48 m. Marine species.

Trimma grammistes (Tomiyama, 1936). – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by Evans (2006: 112). – Distribution: NC: [6], 7, [8], [9], [10]. Depth: 0–15 m. Marine species.

Trimma lantana Winterbottom & Villa, 2003. – Taxonomy: First record from New Caledonia as *Trimma naudei* (non Smith, 1957) by Fourmanoir & Laboute (1976: 143), and as *Trimma* sp. by Fricke & Kulbicki (2006: 351). SMNS material. – Distribution: NC: 1, 14. Depth: 0–30 m. Marine species.

Trimma milta Winterbottom, 2002. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006:

352). SMNS and USNM material. – Distribution: NC: 1, 14. Depth: 1–70 m. Marine species.

Trimma okinawae (Aoyagi, 1949). – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 35). IRDNC, SMNS and USNM material. – Distribution: NC: 1, [6], [7], [8], [9], [10], [11], 12, 14. Depth: 0–30 m. Marine species.

Trimma stobbsi Winterbottom, 2001. – Taxonomy: Originally described from New Caledonia (southern Grande Terre) by Winterbottom (2001: 20). ROM material. – Distribution: NC: [6], [7], [8], [9], 10. Depth: 0–41 m. Marine species.

Trimma striatum (Herre, 1945). – Taxonomy: First record from New Caledonia as *Trimma striata* by Myers (1999: 260); previously described as *Zonogobius capostriatus* by Goren (1981: 94–95), and reported as *Trimma* sp. by Rivaton & Bourret (1999: 174). MNHN and SMNS material. – Distribution: NC: [6], 7, 8, 9, 10. Depth: 0–30 m. Marine species.

Trimma taylori Lobel, 1979. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 22). USNM material. – Distribution: NC: 14. Depth: 0–48 m. Marine species.

Trimma tevegae Cohen & Davis, 1969. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 22). ROM and SMNS material. – Distribution: NC: [6], [7], [8], [9], 10, 14. Depth: 0–40 m. Marine species.

Trimma unisquamis (Gosline, 1959). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Kulbicki & Williams (1997: 22). IRDNC, SMNS and USNM material. – Distribution: NC: 14. Depth: 0–200 m. Marine species.

Trimmatom eviotops (Schultz, 1943). – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 22); subsequently described as *Eviota corneliae* by Fricke (1998: 2). IRDNC, SMNS and USNM material. – Distribution: NC: [6], [7], [8], [9], [10], [11], 12, 14. Depth: 0–5 m. Marine species.

Trimmatom nanus Winterbottom & Emery, 1981. – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 22). USNM material. – Distribution: NC: [1], 14; AU: 17. Depth: 2–30 m. Marine species.

Valenciennea decora Hoese & Larson, 1994. – Taxonomy: First record from New Caledonia by Randall et al. (1997: 411). – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 2–33 m. Marine species.

Valenciennea helsdingenii (Bleeker, 1858). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Laboute & Grandperrin (2000: 402, 414). – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 1–45 m. Marine species.

Valenciennea limicola Hoese & Larson, 1994. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 415). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 2–35 m. Marine species.

Valenciennea longipinnis (Lay & Bennett, 1839) – Eleotris à longues nageoires. – Taxonomy: First record from New Caledonia as *Eleotriodes longipinnis* by Plessis & Fourmanoir (1966c: 137). AMS and IRDNC material. – Distribution: NC: 1, 6, 7, 8, [9], 10, [11], [12]. Depth: 2–30 m. Marine species.

Valenciennea muralis (Valenciennes [ex Quoy & Gaimard] in Cuvier & Valenciennes, 1837). – Taxonomy: First record from New Caledonia by Evans (2006: 112); previously reported as *Gergobius taeniura* by Whitley (1961: 64). – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 1–15 m. Marine species.

Valenciennea parva Hoese & Larson, 1994. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 415). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 1–15 m. Marine species.

Valenciennea puellaris (Tomiyama in Tomiyama & Abe, 1956) – Eleotris tâcheté d'orange. – Taxonomy: First record from New Caledonia as *Valenciennes puellaris* by Fourmanoir & Laboute (1976: 143). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 14. Depth: 2–84 m. Marine species.

Valenciennea randalli Hoese & Larson, 1994. – Taxonomy: First record from New Caledonia by Randall et al. (1997: 537). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 8–30 m. Marine species.

Valenciennea sexguttata (Valenciennes in Cuvier & Valenciennes, 1837). – Taxonomy: First record from New Caledonia as *Valenciennea sexguttatus* by Rivaton et al. (1990: 42); also one specimen observed at Thio, southeastern lagoon of Grande Terre, by M. Kulbicki in 1997. – Distribution: NC: [6], 7, 8, 9, [10], 14. Depth: 0–10 m. Marine species.

Valenciennea strigata (Broussonet, 1782) – Eleotris à raie bleue. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 144). IRDNC, SMNS and USNM material. – Distribution: NC: [1], 5, 6, 7, 8, 9, [10], 14; AU: 17. Depth: 0–24 m. Marine species.

Valenciennea wardii (Playfair in Playfair & Günther, 1867). – Taxonomy: First record from New Caledonia by Rivaton (1989: 145). IRDNC material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 5–88 m. Marine species.

Vanderhorstia sp. 1. – Taxonomy: Reported from New Caledonia as *Vanderhorstia* sp. by Francis & Randall (1993: 133), as '*Vanderhorstia* sp. A' by Myers (1999: 242), as *Vanderhorstia ornatissima* (non Smith, 1959) by Laboute & Grandperrin (2000: 416). Western Pacific populations apparently belong to an undescribed species, separate from *Vanderhorstia ornatissima* Smith, 1959 which is restricted to the Indian Ocean. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–5 m. Marine species.

Vanderhorstia sp. 2. – Taxonomy: Reported from New Caledonia as 'Gobiidae indéterminé 10' by Laboute & Grandperrin (2000: 418), and as '*Vanderhorstia* sp. 2' by Fricke & Kulbicki (2006: 352). This is apparently an undescribed species endemic to New Caledonia. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–10 m. Marine species.

Vanderhorstia ambanoro (Fourmanoir, 1957). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 416). – Distribution: NC: 5, [6], 7, 8, [9], [10]. Depth: 0–30 m. Marine species.

Yongeichthys nebulosus (Forsskål in Niebuhr, 1775). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 42) and Kulbicki & Wantiez (1990: 124); previously reported as *Yongeichthys criniger* (non Valenciennes in Cuvier & Valenciennes, 1837) by Whitley (1961: 65), and as 'Gobiidae indéterminé 12' by Laboute & Grandperrin

(2000: 418). AMS, IRDNC and USNM material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–15 m. Freshwater, transitional water and marine.

Microdesmidae

Gunnellichthys curiosus Dawson, 1968. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 419). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 9–60 m. Marine species.

Gunnellichthys monostigma Smith, 1958. – Taxonomy: First record from New Caledonia as *Gunellichthys monostigma* by Fourmanoir (1971c: 497); previously described as *Lepidoblennius caledonicus* by Sauvage (1874: 338). The latter name is an unused senior synonym, which should not be used due to reversal of precedence. MNHN and SMNS material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 0–20 m. Marine species.

Gunnellichthys pleurotaenia Bleeker, 1858. – Taxonomy: First record from New Caledonia (southwestern Grande Terre) by Fricke & Kulbicki (2006: 352). IRDNC and SMNS material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–8 m. Marine species.

Gunnellichthys viridescens Dawson, 1968. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 419). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–21 m. Marine species.

Ptereleotridae

Nemateleotris decora Randall & Allen, 1973 – Eleotris décoré. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 142). – Distribution: NC: [6], 7, 8, [9], [10], 14. Depth: 25–70 m. Marine species.

Nemateleotris helfrichi Randall & Allen, 1973. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 41), Rivaton & Bourret (1999: 172), and Laboute & Grandperrin (2000: 420). – Distribution: NC: 8, 14. Depth: 25–90 m. Marine species.

Nemateleotris magnifica Fowler, 1938 – Eleotris magnifique. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 142). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], [11], 12, 14. Depth: 6–70 m. Marine species.

Parioglossus dotui Tomiyama in Tomiyama & Abe, 1958. – Taxonomy: First record from New Caledonia (Grande Terre) as *Parioglossus dolui* by Fourmanoir (1971c: 497). IRDNC material. – Distribution: NC: [6], [7], 8, [9], 10. Depth: 0–5 m. Transitional water and marine.

**Parioglossus neocaledonicus* Dingerkus & Séret, 1992. – Taxonomy: Originally described from New Caledonia (Grande Terre) by Dingerkus & Séret (1992a). AMNH, BMNH and MNHN material. – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 0–5 m. Freshwater, transitional water and marine.

Parioglossus nudus Rennis & Hoese, 1985. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 352). SMNS material. – Distribution: NC: 14. Depth: 0–37 m. Marine species.

Parioglossus philippinus (Herre, 1945). – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 352). SMNS material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 0–10 m. Transitional water and marine.

Parioglossus rainfordi McCulloch, 1921. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 41) and Thollot (1996a: 14). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–5 m. Transitional water and marine.

Ptereleotris evides (Jordan & Hubbs, 1925) – Eleotris à trois couleurs. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 142). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17. Depth: 2–15 m. Marine species.

Ptereleotris hanae (Jordan & Snyder, 1901) – Eleotris émeraude. – Taxonomy: First record from New Caledonia as *Vireosa hanae* by Fourmanoir & Laboute (1976: 143). – Distribution: NC: 5, [6], [7], 8, [9], 10, 14. Depth: 3–50 m. Marine species.

Ptereleotris heteroptera (Bleeker, 1855). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 421). IRDNC material. – Distribution: NC: [6], 7, 8, [9], [10], 14. Depth: 3–46 m. Marine species.

Ptereleotris microlepis (Bleeker, 1856). – Taxonomy: First record from New Caledonia by Fourmanoir (1971c: 497). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 14. Depth: 1–50 m. Marine species.

Ptereleotris monoptera Randall & Hoese, 1985. – Taxonomy: First record from New Caledonia by Randall (2005a: 567). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 6–50 m. Marine species.

Ptereleotris zebra (Fowler, 1938). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 421). – Distribution: NC: [1], [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 2–31 m. Marine species.

Ephippidae

Platax orbicularis (Forsskål in Niebuhr, 1775). – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 236); subsequently reported as '*Platax ou bicularis*' by Evans (2006: 99). – Distribution: NC: 5, 6, 7, 8, 9, [10], [11], 12. Depth: 1–30 m. Transitional water and marine.

Platax pinnatus (Linnaeus, 1758) – Roussette. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 236–237). – Distribution: NC: 1, [5], [6], 7, 8, [9], [10]. Depth: 10–30 m. Transitional water and marine.

Platax teira (Forsskål in Niebuhr, 1775). – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 286, 290–291). USNM material. – Distribution: NC: 5, 6, 7, [8], [9], [10], [11], [12], 14, [15]; AU: 18; NZ: [20], [21], 23. Depth: 0–20 m. Transitional water and marine.

Scatophagidae

Scatophagus argus (Linné, 1766) – Scatophage argentée; Peebe (Fwai, Jawe, Nemi), Paaba (Paici). – Taxonomy: First record from New Caledonia (Grande Terre) by Weber & Beaufort (1915: 32). IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], [10]. Depth: 0–5 m. Freshwater, transitional water and marine.

Scatophagus tetracanthus (Lacepède, 1802). – Taxonomy: First record from New Caledonia (Grande Terre) by Rivaton et al. (1990: 66) and Rivaton & Bourret (1999: 134). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–5 m. Freshwater, transitional water and marine.

Selenotoca multifasciata (Richardson, 1846). – Taxonomy: First record from New Caledonia (Grande Terre) as *Scatophagus multifasciatus* by Borodin (1932: 86). The record of this species needs additional verification. – Distribution: NC: [5], [6], [7], 8, [9], [10]. Depth: 0–5 m. Freshwater, transitional water and marine.

Siganidae

Siganus argenteus (Quoy & Gaimard, 1825) – Picot argenté. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 216). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–40 m. Marine species.

Siganus corallinus (Valenciennes in Cuvier & Valenciennes, 1835) – Picot corail. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 218). – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 3–30 m. Marine species.

Siganus doliatus Guérin-Méneville, 1829–1838 – Picot à lignes bleues, picot cerclé. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 219). IRDNC and USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12. Depth: 0–5 m. Marine species.

Siganus fuscescens (Houttuyn, 1782) – Picot pintade, picot gris. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 71) and Letourneur et al. (1998: 45); previously reported as *Amphacanthus nebulosus* by Whitley (1961: 64), as *Siganus oramin* by Plessis & Fourmanoir (1966c: 137), as *Siganus canaliculatus* (non Park, 1797) by Thollot & Kulbicki (1988: 615, 618), and as *Siganus* sp. by Laboute & Grandperrin (2000: 443). *Siganus nebulosus* (Quoy & Gaimard, 1825) may be a valid species, replacing *S. fuscescens* in the Southwest Pacific (G. R. Allen, personal communication, May 2010). AMS and IRDNC material. – Distribution: NC: [1], 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 2–50 m. Marine species.

Siganus lineatus (Valenciennes in Cuvier & Valenciennes, 1835) – Picot rayé; Mui (Canala). – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 219); previously reported as *Theutis* sp. by Jouan (1861: 298–299), and as *Hepatus concatenatus* (non Valenciennes in Cuvier & Valenciennes, 1835) by Borodin (1932: 88). – Distribution: NC: 5, 6, 7, 8, [9], 10, [11], [12]. Depth: 0–20 m. Marine species.

Siganus puellus (Schlegel, 1852) – Picot à lignes bleues. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 216). IRDNC material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12. Depth: 1–30 m. Marine species.

Siganus punctatus (Schneider [ex Forster] in Bloch & Schneider, 1801) – Picot à tâches oranges. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 137). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–40 m. Marine species.

Siganus spinus (Linnaeus, 1758). – Taxonomy: First record from New Caledonia as *Amphacanthus spinus* by Whitley (1961: 64). AMS and SMNS material. – Distribution: NC: 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 1–50 m. Marine species.

Siganus uspi Gawel & Woodland, 1974. – Taxonomy: First record from New Caledonia by Randall (2005a: 602). – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 3–30 m. Marine species.

Siganus vermiculatus (Valenciennes in Cuvier & Valenciennes, 1835). – Taxonomy: First record from New Caledonia as *Teuthis vermiculata* by Jouan (1879: 334); also reported by Marquet et al. (1997: 31). The record of this species needs additional verification. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–20 m. Transitional water and marine.

Siganus vulpinus (Schlegel & Müller, 1845) – Picot renard. – Taxonomy: First record from New Caledonia as *Lo vulpinus* by Kulbicki (1988a: 93). USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 11, 12. Depth: 1–30 m. Marine species.

**Siganus woodlandi* Randall & Kulbicki, 2005. – Taxonomy: Originally described from southwestern New Caledonia (Grande Terre) by Randall & Kulbicki (2005); previously reported as *Siganus* sp. by Fourmanoir & Laboute (1976: 217), and as *Siganus argenteus* (non Quoy & Gaimard, 1825) by Laboute & Grandperrin (2000: 440). BPBM, MNHN and USNM material. This species may not be endemic, but also be present in Vanuatu and possibly southern Japan; these records need verification. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 5–15 m. Marine species.

Zanclidae

Zanclus cornutus (Linnaeus, 1758) – Cocher. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 132). IRDNC material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18; NZ: 20. Depth: 3–182 m. Marine species.

Acanthuridae

Acanthurus achilles Shaw, 1803. – Taxonomy: First record from New Caledonia by Myers (1999: 269). This species has also been observed at Thio (southeastern lagoon of Grande Terre) by M. Kulbicki. – Distribution: NC: [6], 7, 8, 9, [10]. Depth: 0–10 m. Marine species.

Acanthurus albipectoralis Allen & Ayling, 1987. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 35). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], [11], 12, 14. Depth: 5–20 m. Marine species.

Acanthurus auranticavus Randall, 1956. – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by Evans (2006: 113). – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 0–8 m. Marine species.

Acanthurus bariene Lesson, 1830. – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by Evans (2006: 113). – Distribution: NC: 5, [6], 7, [8], [9], [10]. Depth: 6–50 m. Marine species.

Acanthurus blochii Valenciennes in Cuvier & Valenciennes, 1835 – Chirurgien, picot canaque. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 21) and Kulbicki & Wantiez (1990: 124). AMS, IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–12 m. Marine species.

Acanthurus dussumieri Valenciennes in Cuvier & Valenciennes, 1835 – Chirurgien de Dussumier, picot canaque. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 204). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18; NZ: 23. Depth: 1–131 m. Marine species.

Acanthurus grammoptilus Richardson, 1843. – Taxonomy: First record from New Caledonia (southwestern Grande Terre) by Fricke & Kulbicki (2006: 353). SMNS material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 2–91 m. Marine species.

Acanthurus guttatus Bloch & Schneider [ex Forster], 1801. – Taxonomy: First record from New Caledonia as *Hepatus guttatus* by Borodin (1932: 88). – Distribution: NC: 5, 6, [7], 8, [9], [10], 14. Depth: 0–6 m. Marine species.

Acanthurus leucopareius (Jenkins, 1903) – Chirurgien à joue blanche. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 206). – Distribution: NC: [6], [7], 8, [9], [10], [11], 12, 14, 16. Depth: 1–85 m. Marine species.

Acanthurus lineatus (Linnaeus, 1758) – Chirurgien à lignes bleues. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 206). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–25 m. Marine species.

Acanthurus mata (Cuvier, 1829) – Chirurgien bleu, picot canaque, chirurgien rayé. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 206); previously reported as *Teuthis bleekeri* by Whitley (1961: 65). AMS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14; AU: 17. Depth: 3–100 m. Marine species.

Acanthurus nigricans (Linnaeus, 1758) – Chirurgien à marques jaunes. – Taxonomy: First record from New Caledonia by Fourmanoir (1981: 28); previously reported as *Acanthurus gahm* (non Forsskål in Niebuhr, 1775) by Borodin (1932: 87), and as *Acanthurus aliala* by Fourmanoir & Laboute (1976: 204). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 14. Depth: 1–67 m. Marine species.

Acanthurus nigricauda Duncker & Mohr, 1929. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 21) and Kulbicki et al. (1993: 29). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–30 m. Marine species.

Acanthurus nigrofuscus (Forsskål in Niebuhr, 1775) – Chirurgien brun noir. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 207). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17, 18. Depth: 0–25 m. Marine species.

Acanthurus nigros Günther, 1861. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 353) as *Acanthurus nigroris* (non Valenciennes in Cuvier & Valenciennes, 1835). SMNS material. Taxonomic decision of Randall (2002: 50). – Distribution: NC: 6, 7, 8, [9], [10]. Depth: 1–90 m. Marine species.

Acanthurus nubilus (Fowler & Bean, 1929) – Chirurgien rond. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 207). – Distribution: NC: 6, 7, 8, 9, [10]. Depth: 5–90 m. Marine species.

Acanthurus olivaceus Bloch & Schneider [ex Forster], 1801 – Chirurgien olive, chirurgien à épaulettes. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 207). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 3–46 m. Marine species.

Acanthurus pyroferus Kittlitz, 1834 – Chirurgien porteur de feu. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 208); previously reported as *Acanthurus celebicus* by Borodin (1932: 87). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 4–60 m. Marine species.

Acanthurus thompsoni (Fowler, 1923). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 21) and Kulbicki et al. (1994: 35). – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 14. Depth: 4–119 m. Marine species.

Acanthurus triostegus (Linnaeus, 1758) – Chirurgien à raies noires. – Taxonomy: First record from New Caledonia as *Teuthis triostegus* by Whitley (1961: 65); previously reported as *Acanthurus* sp. by Jouan (1861: 261). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], [11], 12, 14; AU: 17, 18; NZ: 20. Depth: 0–90 m. Marine species.

Acanthurus xanthopterus Valenciennes in Cuvier & Valenciennes, 1835 – Chirurgien à nageoires jaunes. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 208); previously reported as *Teuthis fuliginosus* by Whitley (1961: 65). SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–100 m. Marine species.

Ctenochaetus binotatus Randall, 1955. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 21) and Kulbicki et al. (1994: 35). BPBM, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 3–53 m. Marine species.

Ctenochaetus cyanocheilus Randall & Clements, 2001. – Taxonomy: Recorded from New Caledonia in original description by Randall & Clements (2001: 9–13); previously reported as *Ctenochaetus strigosus* (non Bennett, 1828) by Rivaton et al. (1990: 21). BPBM, IRDNC, MNHN, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 11, [12], 14. Depth: 2–30 m. Marine species.

Ctenochaetus striatus (Quoy & Gaimard, 1825) – Chirurgien strié. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 131). SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–30 m. Marine species.

Naso annulatus (Quoy & Gaimard, 1825). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 21) and Kulbicki et al. (1994: 36). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], [12], 14; AU: 17, 18. Depth: 1–60 m. Marine species.

Naso brachycentron (Valenciennes in Cuvier & Valenciennes, 1835) – Nason à épines courtes. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 211). – Distribution: NC: 5, [6], 7, 8, [9], 10, [11], 12, 14. Depth: 1–20 m. Marine species.

Naso brevirostris (Cuvier, 1829) – Nason à museau court, licorne. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 113). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 2–122 m. Marine species.

Naso caesius Randall & Bell, 1992. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 36). – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], [11], 12, 14. Depth: 3–36 m. Marine species.

Naso fageni Morrow, 1954. – Taxonomy: First record from New Caledonia by Randall (2002: 81). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 3–35 m. Marine species.

Naso hexacanthus (Bleeker, 1855) – Nason gris. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 212); also reported as *Naso vomer* by Fourmanoir (1976: 76), and as *Naso thorpei* by Rivaton et al. (1990: 21). – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17. Depth: 6–150 m. Marine species.

Naso lituratus (Bloch & Schneider [ex Forster], 1801) – Nason bariolé. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 212). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 0–90 m. Marine species.

Naso lopezi Herre, 1927. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 434). – Distribution: NC: 6, 7, 8, 9, [10]. Depth: 6–20 m. Marine species.

Naso maculatus Randall & Struhsaker, 1981. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 36). – Distribution: NC: 1, [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 43–220 m. Marine species.

Naso tonganus (Valenciennes [ex Quoy & Gaimard] in Cuvier & Valenciennes, 1835) – Nason loupe. – Taxonomy: First record from New Caledonia by Randall (2002: 19); previously reported as *Naso tuberosus* (non Lacepède, 1801) by Fourmanoir & Laboute (1976: 213). SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 2–40 m. Marine species.

Naso unicornis (Forsskål in Niebuhr, 1775) – Dawa, nason vert, licorne. – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 1–180 m. Marine species.

Naso vlamingii (Valenciennes in Cuvier & Valenciennes, 1835) – Nason à lignes violettes. – Taxonomy: First record from New Caledonia as *Naso vlamingi* by Fourmanoir & Laboute (1976: 214). – Distribution: NC: 1, 5, 6, 7, 8, [9], [10]. Depth: 1–50 m. Marine species.

Paracanthurus hepatus (Linné, 1766) – Chirurgien bleu. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 209). – Distribution: NC: [1], 5, 6, 7, 8, 9, [10], [11], 12, 14; AU: 17. Depth: 2–40 m. Marine species.

Prionurus maculatus Ogilby, 1887 – Queue en scie. – Taxonomy: First record from New Caledonia as *Xesurus maculatus* by Fourmanoir & Laboute (1976: 210). – Distribution: NC: [1], 5, 6, [7], 8, [9], 10, [11], [12], 14; AU: 17, 18; NZ: 20, 21, 23. Depth: 0–20 m. Transitional water and marine.

Zebrasoma scopas (Cuvier [ex Renard], 1829) – Chirurgien à balai. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 210); previously reported as *Zebrasoma flavescens* (non Bennett, 1828) by Plessis & Fourmanoir (1966c: 132). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–40 m. Marine species.

Zebrasoma velifer (Bloch, 1797) – Chirurgien à voilier. – Taxonomy: First record from New Caledonia as *Zebrasoma veliferum* by Kulbicki (1988a: 93); previously reported as *Zebrasoma desjardinii* (non Bennett, 1836) by Fourmanoir & Laboute (1976: 210). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–30 m. Marine species.

Scombrolabracidae

Scombrolabrax heterolepis Roule, 1921 – Escolier aile longue. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 114, 117). IRDNC material. – Distribution: NC: 4. Depth: 100–950 m. Marine species.

Sphyraenidae

Sphyraena barracuda (Edwards in Catesby, 1771) – Barracouda, brochet de mer. – Taxonomy: First record from New Caledonia by Plessis & Fourmanoir (1966c: 136). – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14; AU: 17. Depth: 1–100 m. Transitional water and marine.

Sphyraena forsteri (Cuvier in Cuvier & Valenciennes, 1829) – Bécune foncée. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 185); previously reported as *Sphyraena toxeuma* by Plessis & Fourmanoir (1966c: 136), and sbsequently as *Sphyraena japonica* (non Cuvier in Cuvier & Valenciennes, 1829) by Rivaton et al. (1990: 72), and as *Sphyraena* sp. 2 by Laboute & Grandperrin (2000: 337). IRDNC material. – Distribution: NC: 5, 6, 7, 8, 9, [10], [11], 12, 14. Depth: 6–300 m. Marine species.

Sphyraena helleri Jenkins, 1901. – Taxonomy: First record from New Caledonia by Senou (2001: 3693); previously reported as *Sphyraena acutipinnis* (non Day, 1878) and *Sphyraena novaehollandiae* by Rivaton et al. (1990: 72). – Distribution: NC: [6], [7], 8, [9], 10. Depth: 15–104 m. Marine species.

Sphyraena jello Cuvier in Cuvier & Valenciennes, 1829 – Bécune, brochet de mer. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 185); subsequently reported as '*Sphyraena* sp. 1' by Laboute & Grandperrin (2000: 337). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 20–200 m. Marine species.

Sphyraena obtusata Cuvier in Cuvier & Valenciennes, 1829 – Bécune obtuse. – Taxonomy: First record from New Caledonia by Thollot & Kulbicki (1988: 615); previously reported as *Sphyraenella flavicauda* by Whitley (1961: 65), and as *Sphyraena chrysotaenia* (non Klunzinger, 1884) by Fourmanoir & Laboute (1976: 185). AMS and IRDNC material. – Distribution: NC: 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 10–120 m. Marine species.

Sphyraena putnamae Jordan & Seale, 1905 – Bécune à chevrons. – Taxonomy: First record from New Caledonia by Thollot & Kulbicki (1988: 618); previously reported as *Sphyraena bleekeri* by Fourmanoir & Laboute (1976: 184). – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 5–20 m. Marine species.

Sphyraena qenie Klunzinger, 1870. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 185); previously reported as *Sphyraena* sp. by Jouan (1861: 302–303). – Distribution: NC: 5, [6], 7, 8, [9], [10], 14. Depth: 2–30 m. Marine species.

Sphyraena waitii Ogilby, 1908. – Taxonomy: First record from New Caledonia as *Sphyraena waittei* by Kulbicki et al. (1993: 29). The record of this species needs additional verification. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 5–40 m. Marine species.

Gempylidae

Diplospinus multistriatus Maul, 1948. – Taxonomy: First record from New Caledonia by Fourmanoir (1969: 52). IRDNC

material. – Distribution: NC: 4, [13], [14], [15], [16]; AU: [17], [18]; NZ: 20. Depth: 50–1000 m. Marine species.

Gempylus serpens Cuvier, 1829 – Maquereau serpent, barracouta. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 113, 117). – Distribution: NC: 14; AU: 17. Depth: 0–600 m. Marine species.

Lepidocybium flavobrunneum (Smith, 1843) – Tazard brun, escolar. – Taxonomy: First record from New Caledonia by Fourmanoir (1970b: 43–45). – Distribution: NC: 4, 5, 8, 14; AU: 17; NZ: 23. Depth: 200–885 m. Marine species.

Nealotus tripes Johnson, 1865. – Taxonomy: First record from New Caledonia by Fourmanoir (1969: 52). – Distribution: NC: 1, 3, 14; AU: 17; NZ: 20, 22. Depth: 914–1646 m. Marine species.

Neoepinnula orientalis (Gilchrist & Bonde, 1924). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 39). IRDNC material. – Distribution: NC: 4. Depth: 200–570 m. Marine species.

Nesiarchus nasutus Johnson, 1862. – Taxonomy: First record from New Caledonia by Fourmanoir (1969: 52). – Distribution: NC: 4. Depth: 200–1200 m. Marine species.

Promethichthys prometheus (Cuvier in Cuvier & Valenciennes, 1832) – Barracouta, reviens. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 113). – Distribution: NC: 1, 4, 6, 8, 14; AU: 17. Depth: 80–800 m. Marine species.

**Rexea alisae* Roberts & Stewart, 1997 – Escolier d'Alis. – Taxonomy: Originally described from New Caledonia by Roberts & Stewart (1997: 133–135). AMS, MNHN and NMNZ material. – Distribution: NC: 5, [6], [8], [11], [12], 13. Depth: 470–580 m. Marine species.

Rexea antefurcata Parin, 1989 – Escolier à longues ailes. – Taxonomy: Recorded from New Caledonia (Lord Howe Rise) in original description by Parin (1989: 19–21); previously reported as *Rexea prometheoides* (non Bleeker, 1856) by Fourmanoir & Rivaton (1979: 424). MNHN and NMNZ material. – Distribution: NC: 1, 2, 12, 13; NZ: 21, 22, 23, 24. Depth: 230–920 m. Marine species.

Rexea bengalensis (Alcock, 1894) – Escalier bengalais, petit escolier. – Taxonomy: First record from New Caledonia by Roberts & Stewart (1997: 135–138). MNHN and NMNZ material. – Distribution: NC: 1, 5. Depth: 450–710 m. Marine species.

Rexea solandri (Cuvier in Cuvier & Valenciennes, 1831). – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 113, 117). – Distribution: NC: [6], [7], 8, [9], [10]; NZ: 23, 24, 25, 26, 27, 28, 29, 30. Depth: 100–800 m. Marine species.

Rexichthys johnpaxtoni Parin & Astakhov, 1987. – Taxonomy: First record from New Caledonia by Parin & Paxton (1990: 117). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 270–470 m. Marine species.

Ruvettus pretiosus Cocco, 1833 – Poisson huile, ruvet. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 329). – Distribution: NC: [6], [7], 8, [9], [10]; NZ: 23. Depth: 100–800 m. Marine species.

Thyrsitoides marleyi Fowler, 1929 – Escolier gracile. – Taxonomy: First record from New Caledonia by Fourmanoir & Rivaton (1979: 432). – Distribution: NC: [6], [7], [8], [9], [10], [11], 12, 14. Depth: 0–400 m. Marine species.

Trichiuridae

Aphanopus carbo Lowe, 1839. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 117). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 200–1700 m. Marine species.

Benthodesmus elongatus (Clarke, 1879). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 76) and Rivaton & Bourret (1999: 332). IRDNC material. – Distribution: NC: 4; NZ: 22, 29. Depth: 280–550 m. Marine species.

Lepidopus caudatus (Euphrasen, 1788). – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 114). – Distribution: NC: 4; NZ: 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 42–620 m. Marine species.

Trichiurus lepturus Linnaeus, 1758. – Taxonomy: First record from New Caledonia by Tholloт & Kulbicki (1988: 618); previously reported as *Trichiurus haumela* by Fourmanoir & Laboute (1976: 328). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 0–350 m. Marine species.

Scombridae

Acanthocybium solandri (Cuvier in Cuvier & Valenciennes, 1832) – Tazard du large. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 183). – Distribution: NC: 1, [2], [3], [4], 5, 6, 7, 8, [9], [10], [11], [12], [13], [14], [15], 16; AU: 17, [18]; NZ: [19], [20], [21], 23. Depth: 0–12 m. Marine species.

Allothunnus fallai Serventy, 1948. – Taxonomy: First record from New Caledonia by Yatsu (1995: 29, 46–48). IRDNC material. – Distribution: NC: 12, 13; AU: [17], 18; NZ: 19, [20], 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–20 m. Marine species.

Auxis thazard (Lacepède [ex Commerson], 1800). – Taxonomy: First record from New Caledonia by Rivaton & Bourret (1999: 334). – Distribution: NC: [1], [3], [4], [5], [6], [7], 8, [9], [10], [14], [16]. Depth: 20–50 m. Marine species.

Euthynnus affinis (Cantor, 1849) – Bonite à dos rayé, thonine. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 322). – Distribution: NC: 1, 5, [6], 7, 8, [9], 10, [11], 12, 14. Depth: 0–200 m. Marine species.

Grammatorcynus bicarinatus (Quoy & Gaimard, 1825). – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 23). USNM material. – Distribution: NC: 14. Depth: 15–50 m. Marine species.

Grammatorcynus bilineatus (Rüppell, 1836) – Tazard à larges écailles, maquereau saumon. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 66), Rivaton & Bourret (1999: 340) and Evans (2006: 115); previously reported as *Grammatocyrnus bicarinatus* (non Quoy & Gaimard, 1824) by Fourmanoir & Laboute (1976: 183). – Distribution: NC: [1], 5, [6], 7, 8, [9], [10], 14. Depth: 15–50 m. Marine species.

Gymnosarda unicolor (Rüppell, 1836) – Thon à dents de chien. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 183). – Distribution: NC: 1, 6, 7, 8, [9], [10], 14. Depth: 10–250 m. Marine species.

Katsuwonus pelamis (Linnaeus, 1758) – Bonite à ventre rayé, bonite folle, listao. – Taxonomy: First record from New

Caledonia as *Euthynnus pelamis* by Fourmanoir (1971b: 114). – Distribution: NC: 1, [6], [7], 8, [9], [10], [11], 12, 14; AU: 17, 18; NZ: [21], 23, 25. Depth: 0–260 m. Marine species.

Rastrelliger kanagurta (Cuvier, 1816) – Maquereau. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 190). USNM material. – Distribution: NC: 5, 6, 7, 8, 9, 10, 14. Depth: 20–90 m. Marine species.

Scomberomorus commerson (Lacepède [ex Commerson], 1800) – Tazard rayé du lagon. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 182). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14. Depth: 10–70 m. Marine species.

Thunnus alalunga (Bonnaterre, 1788) – Thon blanc, germon, albacore, thon barrique. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b); previously reported as *Scomber germo* by Jouan (1861: 292), and subsequently as 'Albacore' by Wang (1988). – Distribution: NC: 1, [2], [6], [7], 8, [9], [10], [11], [12], [13], 14; AU: 17, 18; NZ: 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–600 m. Marine species.

Thunnus albacares (Bonnaterre, 1788) – Thon à nageoires jaunes. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b). – Distribution: NC: 1, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18. Depth: 0–250 m. Marine species.

Thunnus obesus (Lowe, 1839) – Thon obèse, thon aux gros yeux, patudo. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 323). – Distribution: NC: 1, [3], [4], [5], 6, 7, 8, 9, [10]. Depth: 0–250 m. Marine species.

Xiphiidae

Xiphias gladius Linnaeus, 1758 – Espadon, poisson épée. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 326). – Distribution: NC: 1, [3], [4], [6], [7], 8, [9], [10], [11], [12], 14, [16]; AU: [17], [18]; NZ: [19], 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 0–800 m. Marine species.

Istiophoridae

Istiompax indicus (Cuvier in Cuvier & Valenciennes, 1832) – Marlin noir. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 324). – Distribution: NC: 1, [3], [4], [6], [7], 8, [9], [10], [11], [12], 14; AU: 17, [18]; NZ: [21], 23. Depth: 0–915 m. Marine species.

Istiophorus platypterus (Shaw in Shaw & Nodder, 1792) – Voilier, empereur éventail. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 324). – Distribution: NC: 1, [3], [4], [6], [7], 8, [9], [10], [11], [12], 14; AU: 17, [18]; NZ: [21], 23. Depth: 0–200 m. Marine species.

Kajikia audax (Philippi, 1887) – Marlin rayé, empereur. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 324). – Distribution: NC: 1, [3], [4], [6], [7], 8, [9], [10], [11], [12]. Depth: 0–200 m. Marine species.

Makaira mazara (Jordan & Snyder, 1901) – Marlin bleu, empereur. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 325). – Distribution: NC: 1, [3], [4], [6], [7], 8, [9], [10], [11], [12], 14; AU: [17], [18]; NZ: [21], 23. Depth: 0–200 m. Marine species.

Makaira nigricans Lacepède, 1802. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 44). – Distribution: NC: [1], [3], [4], [6], [7], 8, [9], [10]. Depth: 0–200 m. Marine species.

Tetrapturus angustirostris Tanaka, 1915 – Marlin à rostre court. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 325). – Distribution: NC: 1, [3], [4], [6], [7], 8, [9], [10], [11], [12], 14; AU: [17], [18]; NZ: [21], 23. Depth: 0–1830 m. Marine species.

Centrolophidae

Hyperoglyphe antarctica (Carmichael, 1819) – Sériole argentée. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 33) and Kulbicki et al. (1994: 36). IRDNC material. – Distribution: NC: 1, [6], [7], 8, [9], [10], [11], [12]; AU: [17], [18]; NZ: 21, 22, 23, 24, 25, 26, 27, 28, 29, 30. Depth: 270–700 m. Marine species.

Nomeidae

Cubiceps caeruleus Regan, 1914. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 117). IRDNC material. – Distribution: NC: 4; AU: 17; NZ: 20, 25, 29. Depth: 0–800 m. Marine species.

Cubiceps pauciradiatus Günther, 1872. – Taxonomy: First record from New Caledonia by Rivaton & Bourret (1999: 340). IRDNC material. – Distribution: NC: 4. Depth: 58–1000 m. Marine species.

Psenes cyanophrys Valenciennes in Cuvier & Valenciennes, 1833. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 57) and Rivaton & Bourret (1999: 340). – Distribution: NC: 9. Depth: 20–550 m. Marine species.

Psenes maculatus Lütken, 1880. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 114). – Distribution: NC: 4. Depth: 0–1281 m. Marine species.

Psenes pellucidus Lütken, 1880. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 114). – Distribution: NC: 4; AU: 17. Depth: 50–1000 m. Marine species.

Ariommatidae

Ariomma sp. – Taxonomy: Recorded from New Caledonia (Chesterfield Islands) by Rivaton (1989: 155). – Distribution: NC: 1. Depth: 330 m. Marine species.

Osphronemidae

Trichogaster pectoralis (Regan, 1910) – Gourami perlé. – Taxonomy: Recorded from New Caledonia (Grande Terre) by Marquet et al. (2003: 194). – Distribution: NC: 6, 7. Introduced (in 1955), not native. Freshwater species.

Caproidae

Antigonia capros Lowe, 1843. – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 116). IRDNC material. – Distribution: NC: 1, [5], [7], 14. Depth: 30–300 m. Marine species.

Antigonia malayana Weber, 1913. – Taxonomy: First record from New Caledonia by Fourmanoir & Rivaton (1979: 409). IRDNC material. – Distribution: NC: [5], [6], [7], 8, [9], [10], 12, 13. Depth: 165–304 m. Marine species.

Antigonia rubescens (Günther, 1860). – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 116). IRDNC and SMNS material. – Distribution: NC: 1, [5], [6], [7], 8, [9], [10], 14. Depth: 50–750 m. Marine species.

Paralichthyidae

Pseudorhombus arsius (Hamilton, 1822). – Taxonomy: First record from New Caledonia by Randall (2005a: 616); previously reported as *Pseudorhombus* sp. by Rivaton et al. (1990: 29). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–200 m. Transitional water and marine.

Pleuronectidae

Poecilopsetta multiradiata Kawai, Amaoka & Séret, 2010. – Taxonomy: Originally described from New Caledonia by Kawai et al. (2010: 194). MNHN, NMNZ and NSMT material. – Distribution: NC: 5, [6], [7], [8], [9], [10], [11], [12], 13, 14; AU: [18]; NZ: 19. Depth: 420–452 m. Marine species.

**Poecilopsetta pectoralis* Kawai & Amaoka, 2006. – Taxonomy: Originally described from New Caledonia by Kawai & Amaoka (2006: 264). HUMZ and MNHN material. – Distribution: NC: 5, [6], [7], [8], [9], [10], [11], 12. Depth: 510–580 m. Marine species.

Bothidae

Arnoglossus dalgleishi (Bonde, 1922). – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fricke & Kulbicki (2006: 355). SMNS material. – Distribution: NC: 14. Depth: 50–220 m. Marine species.

Arnoglossus japonicus Hubbs, 1915. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 155). – Distribution: NC: 1. Depth: 350 m. Marine species.

Arnoglossus macrolophus Alcock, 1889. – Taxonomy: First record from New Caledonia (Grande Terre) by Arai & Amaoka (1996: 364). HUMZ and MNHN material. – Distribution: NC: 7, 9. Depth: 18–141 m. Marine species.

**Arnoglossus nigrifrons* Amaoka & Mihara, 2000. – Taxonomy: Originally described from New Caledonia (Chesterfield Islands) by Amaoka & Mihara (2000: 806). HUMZ and MNHN material. – Distribution: NC: 1. Depth: 300 m. Marine species.

Arnoglossus oxyrhynchus Amaoka, 1969. – Taxonomy: First record from New Caledonia by Rivaton (1989: 155). – Distribution: NC: 1, 8. Depth: 215 m. Marine species.

Arnoglossus polyspilus (Günther, 1880). – Taxonomy: First record from New Caledonia by Rivaton (1989: 145, 155). – Distribution: NC: 1, 8. Depth: 68–300 m. Marine species.

**Arnoglossus septemventralis* Amaoka & Mihara, 2000. – Taxonomy: Originally described from New Caledonia (Norfolk Ridge) by Amaoka & Mihara (2000: 787). MNHN and NMNZ material. – Distribution: NC: 13. Depth: 240–250 m. Marine species.

Arnoglossus tenuis Günther, 1880. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 355). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 80–100 m. Marine species.

Asterorhombus cocosensis (Bleeker, 1855). – Taxonomy: First record from New Caledonia as *Asterorhombus intermedius* (non Bleeker, 1866) by Rivaton (1989: 145–146, part), as *Asterorhombus* sp. by Kulbicki et al. (1994: 37), and as *Asterorhombus fijiensis* by Randall (2005a: 612). – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 1–30 m. Marine species.

Asterorhombus filifer Hensley & Randall, 2003. – Taxonomy: Recorded from New Caledonia in original description by Hensley & Randall (2003: 2–7). BPBM material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 3–57 m. Marine species.

Asterorhombus intermedius (Bleeker, 1865). – Taxonomy: First record from New Caledonia as *Orthorombus intermedius* by Thollot & Kulbicki (1988: 614). HUMZ and MNHN material. – Distribution: NC: 1, 3, 5, [6], [7], 8, [9], [10]. Depth: 1–96 m. Marine species.

Bothus mancus (Broussonet, 1782) – Turbot tropical. – Taxonomy: First record from New Caledonia as *Platophrys mancus* by Whitley (1961: 65); previously described as *Pleuronectes lunulatus* by Jouan (1861: 256), and reported as *Pleuronectes rhombus* (non Linnaeus, 1758) by Jouan (1861: 256). AMS and USNM material. – Distribution: NC: 1, 6, [7], 8, [9], 10, [11], [12], 14; AU: 17, 18. Depth: 1–100 m. Marine species.

Bothus pantherinus (Rüppell, 1830) – Turbot léopard. – Taxonomy: First record from New Caledonia as *Platophrys pantherinus* by Ogilby (1898: 770). SMNS and USNM material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], 11, [12], 14; AU: 17, 18. Depth: 1–100 m. Marine species.

Chascanopsetta lugubris Alcock, 1894. – Taxonomy: First record from New Caledonia (Loyalty Islands) by Fourmanoir (1976: 51). – Distribution: NC: 14. Depth: 60–3210 m. Marine species.

Engyprosopon annulatus (Weber, 1913). – Taxonomy: First record from New Caledonia as *Asterorhombus annulatus* by Amaoka & Mihara (2001). HUMZ and MNHN material. – Distribution: NC: 6, 7, 8, 9, [10]. Depth: 32–36 m. Marine species.

**Engyprosopon bellonaensis* Amaoka, Mihara & Rivaton, 1993. – Taxonomy: Originally described from New Caledonia (Bellona Reefs) by Amaoka et al. (1993: 389–392); previously reported as *Engyprosopon* sp. by Rivaton (1989: 146, part). HUMZ and MNHN material. – Distribution: NC: 1. Depth: 67–80 m. Marine species.

Engyprosopon grandisquama (Temminck & Schlegel, 1846) – Turbot à queue tâchetée. – Taxonomy: First record from New Caledonia as *Engyprosopon grandisquamma* by Thollot & Kulbicki (1988: 617). HUMZ and MNHN material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 65–91 m. Marine species.

Engyprosopon hureaui Quéro & Golani, 1990. – Taxonomy: First record from New Caledonia by Amaoka et al. (1993: 402–405); previously reported as *Engyprosopon* sp. by Rivaton et al. (1990: 146, part). HUMZ and MNHN material. – Distribution: NC: 1. Depth: 1–81 m. Marine species.

**Engyprosopon longipterum* Amaoka, Mihara & Rivaton, 1993. – Taxonomy: Originally described from New Caledonia by Amaoka et al. (1993: 416–421); previously reported as *Engyprosopon* sp. by Rivaton (1989: 146, part). HUMZ, MNHN and SMNS material. – Distribution: NC: 1, 14. Depth: 67–88 m. Marine species.

Engyprosopon macrolepis (Regan, 1908). – Taxonomy: First record from New Caledonia by Amaoka et al. (1993: 398–402); previously reported as *Engyprosopon* sp. by Rivaton (1989: 146, part). HUMZ, MNHN and SMNS material. – Distribution: NC: 1, 3, 5, [6], 7, 8, [9], [10], 14. Depth: 3–91 m. Marine species.

Engyprosopon maldivensis (Regan, 1908). – Taxonomy: First record from New Caledonia by Amaoka et al. (1993: 393–397); previously reported as *Engyprosopon macroptera* by Rivaton (1989: 146). HUMZ and MNHN material. – Distribution: NC: 1. Depth: 30–215 m. Marine species.

**Engyprosopon rostratum* Amaoka, Mihara & Rivaton, 1993. – Taxonomy: Originally described from New Caledonia by Amaoka et al. (1993: 411–416); previously reported as *Engyprosopon* sp. by Fourmanoir & Rivaton (1979: 425). HUMZ and MNHN material. – Distribution: NC: 1, [6], [7], [8], 9, [10]. Depth: 41–300 m. Marine species.

**Engyprosopon septempes* Amaoka, Mihara & Rivaton, 1993. – Taxonomy: Originally described from New Caledonia by Amaoka et al. (1993: 405–411); previously reported as *Engyprosopon longipelvis* (non Amaoka, 1969) by Rivaton (1989: 146), and as *Engyprosopon latifrons* (non Regan, 1908) by Rivaton et al. (1990: 29). HUMZ and MNHN material. – Distribution: NC: 1, 3. Depth: 44–88 m. Marine species.

Engyprosopon xystrias Hubbs, 1915. – Taxonomy: First record from New Caledonia by Amaoka et al. (1993: 385–389); previously reported as *Engyprosopon* sp. by Rivaton (1989: 146, part). HUMZ. MNHN and SMNS material. – Distribution: NC: 1, [6], [7], [8], [9], [10], [11], 12, 14. Depth: 105–240 m. Marine species.

Grammatobothus pennatus (Ogilby, 1913). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 29) and Kulbicki et al. (1994: 37). – Distribution: NC: 1. Depth: 80–93 m. Marine species.

Grammatobothus polyophthalmus (Bleeker, 1865). – Taxonomy: First record from New Caledonia by Rivaton (1989: 146). – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 0–90 m. Marine species.

Laeops kitaharae (Smith & Pope, 1906). – Taxonomy: **New record** from New Caledonia; previously reported as *Laeops* sp. by Fourmanoir & Rivaton (1979: 425). IRDNC material. – Distribution: NC: 12. Depth: 420 m. Marine species.

Neolaeops microphthalmus (Bonde, 1922). – Taxonomy: First record from New Caledonia as *Arnoglossus microphthalmus* by Fourmanoir (1969: 55). – Distribution: NC: 4. Depth: 275–400 m. Marine species.

Parabothus coarctatus (Gilbert, 1905). – Taxonomy: First record from New Caledonia by Amaoka et al. (1997: 166–169). HUMZ and MNHN material. – Distribution: NC: 5, [6], [7], [8], [9], [10], [11], 12, 13, 16. Depth: 253–580 m. Marine species.

**Parabothus filipes* Amaoka, Mihara & Rivaton, 1997. – Taxonomy: First record from New Caledonia by (Nova Bank, East Coral Sea) by Amaoka et al. (1997: 158–163); previously reported as *Parabothus* sp. by Rivaton (1989: 155). HUMZ and MNHN material. – Distribution: NC: 1, 2. Depth: 295–330 m. Marine species.

Parabothus kiensis (Tanaka, 1918). – Taxonomy: First record from New Caledonia by Amaoka et al. (1997: 163–166). HUMZ and MNHN material. – Distribution: NC: 5, [6], [7], [8], 9, [10]. Depth: 275–330 m. Marine species.

Taeniopsetta ocellata (Günther, 1880). – Taxonomy: First record from New Caledonia by Rivaton (1989: 155). – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 150–300 m. Marine species.

**Tosarhombus brevis* Amaoka, Mihara & Rivaton, 1997. – Taxonomy: Originally described from New Caledonia by Amaoka et al. (1997: 153–156). HUMZ and MNHN material. – Distribution: NC: 5, [6], [7], [8], 9, [10], 14. Depth: 250–320. Marine species.

**Tosarhombus longimanus* Amaoka, Mihara & Rivaton, 1997. – Taxonomy: Originally described from New Caledonia (Chesterfield Islands) by Amaoka et al. (1997: 148–153); previously reported as *Tosarhombus* sp. by Kulbicki et al. (1994: 37). HUMZ and MNHN material. – Distribution: NC: 1. Depth: 217–310 m. Marine species.

**Tosarhombus neocaledonicus* Amaoka & Rivaton, 1991. – Taxonomy: Originally described from New Caledonia by Amaoka & Rivaton (1991: 461–465); previously reported as '*Tosarhombus* sp. nov.' by Rivaton (1989: 155) and as *Tosarhombus novaensis* by Delannoy [ex Amaoka & Rivaton] (1991: figs., nomen nudum). HUMZ and MNHN material. – Distribution: NC: 1, 2. Depth: 169–325. Marine species.

Samaridae

**Plagiopsetta gracilis* Mihara & Amaoka, 2004. – Taxonomy: Originally described from New Caledonia (Province Nord, Grande Terre) by Mihara & Amaoka (2004: 617–619). MNHN material (holotype). – Distribution: NC: 5. Depth: 300–350 m. Marine species.

**Plagiopsetta stigmosa* Mihara & Amaoka, 2004. – Taxonomy: Originally described from New Caledonia by Mihara & Amaoka (2004: 613–617); previously reported as *Plagiopsetta glossa* (non Franz, 1910) by Rivaton (1989: 155). HUMZ and MNHN material. – Distribution: NC: 1, 2. Depth: 280–330 m. Marine species.

**Samaris chesterfieldensis* Mihara & Amaoka, 2004. – Taxonomy: Originally described from New Caledonia by Mihara & Amaoka (2004: 628–633); previously reported as *Samaris* sp. by Rivaton et al. (1990: 61). HUMZ and MNHN material. – Distribution: NC: 1, 3. Depth: 169–225 m. Marine species.

Samaris cristatus Gray, 1831. – Taxonomy: First record from New Caledonia by Rivaton (1989: 146, 155). HUMZ and MNHN material. – Distribution: NC: 1, 5, 8. Depth: 27–225 m. Marine species.

Samaris macrolepis Norman, 1927. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 61) and Kulbicki et al. (1994: 37). – Distribution: NC: 1, 8. Depth: 6–85 m. Marine species.

**Samaris spinea* Mihara & Amaoka, 2004. – Taxonomy: Originally described from New Caledonia by Mihara & Amaoka (2004: 624–628). HUMZ and MNHN material. – Distribution: NC: 1, 3, [5], [6], [7], [8], [9], 10, 11, 12. Depth: 6–88 m. Marine species.

Samariscus latus Matsubara & Takamuri, 1951. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton et al. (1990: 61), Rivaton & Richer de Forges (1990: 32), and Kulbicki et al. (1994: 37). IRDNC material. – Distribution: NC: 1. Depth: 67 m. Marine species.

**Samariscus multiradiatus* Kawai, Amaoka & Séret, 2008. – Taxonomy: Originally described from New Caledonia by KAWAI et al. (2008); previously reported as *Samariscus* sp. by FOURMANOIR & RIVATON (1979: 426). HUMZ and MNHN material. – Distribution: NC: 1, [5], [6], [7], [8], [9], 10, 11. Depth: 175–430 m. Marine species.

Samariscus triocellatus Woods in Schultz, Woods & Lachner, 1966. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 61) and KULBICKI et al. (1994: 37). IRDNC and USNM material. – Distribution: NC: 1, [6], [7], 8, [9], [10], 14; AU: 17. Depth: 3–30 m. Marine species.

Soleidae

Aesopia cornuta (Kaup, 1858) – Sole à bandes brunes. – Taxonomy: First record from New Caledonia by RIVATON (1989: 146); previously reported as *Aesopia* sp. by FOURMANOIR & LABOUTE (1976: 308). – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 8–100 m. Marine species.

**Aseraggodes magnoculus* Randall, 2005. – Taxonomy: Originally described from New Caledonia (southwestern Grande Terre) by RANDALL (2005b: 203–204). ROM material. – Distribution: NC: [6], [7], 8, [9], [10], 11. Depth: 9–18 m. Marine species.

Aseraggodes melanostictus (Peters, 1877). – Taxonomy: First record from New Caledonia (Loyalty Islands) by FRICKE & KULBICKI (2006: 355). SMNS material. – Distribution: NC: 14. Depth: 1–73 m. Marine species.

Aseraggodes ramsaii (Ogilby, 1889). – Taxonomy: First record from New Caledonia by RANDALL (2005b: 209–210). BPBM material. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 2–25 m. Marine species.

Aseraggodes whitakeri Woods in Schultz, Woods & Lachner, 1966. – Taxonomy: First record from New Caledonia by RANDALL (2005b: 210–211); previously reported as *Aseraggodes* sp. by RIVATON et al. (1990: 71). BPBM and ROM material. – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 0–37 m. Marine species.

Pardachirus pavoninus (Lacepède, 1802) – Sole ocellée. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 308). SMNS and USNM material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–40 m. Marine species.

Pseudaesopia japonica (Bleeker, 1860). – Taxonomy: First record from New Caledonia by RIVATON (1989: 146); previously reported as *Brachirus zebra* (non Bloch, 1787) by WHITLEY (1961: 64). – Distribution: NC: 1, [6], [7], 8, [9], [10]. Depth: 1–68 m. Marine species.

Soleichthys heterorhinos (Bleeker, 1856). – Taxonomy: First record from New Caledonia by KULBICKI & WILLIAMS (1997: 23). USNM material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 1–10 m. Marine species.

Cynoglossidae

Cynoglossus interruptus Günther, 1880. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by KULBICKI et al. (1994: 38). – Distribution: NC: 1, 5. Depth: 50–150 m. Marine species.

Paraplagusia sp. – Taxonomy: Recorded from New Caledonia by RIVATON et al. (1990: 38) and RIVATON & RICHER DE FORGES (1990: 27). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 20–65 m. Marine species.

Triacanthodidae

Bathyphylax bombifrons Myers, 1934. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by MATSUURA & TYLER (1997: 175–176). MNHN material. – Distribution: NC: 1. Depth: 600–615 m. Marine species.

Halimochirurgus alcocki Weber, 1913. – Taxonomy: First record from New Caledonia as *Halimochirus alcocki* by FOURMANOIR (1971b: 118). MNHN and NMNZ material. – Distribution: NC: 5, [6], [7], [8], [9], [10], [11], 12, 13. Depth: 390–610 m. Marine species.

Macrorhamphosodes uradoi (Kamohara, 1933). – Taxonomy: First record from New Caledonia by MATSUURA & TYLER (1997: 178–180). IRDNC, MNHN and NMNZ material. – Distribution: NC: 1, 5, [6], [7], [8], [9], [10], [11], [12], 13; NZ: 23. Depth: 50–675 m. Marine species.

Paratriacanthodes retrospinis Fowler, 1934. – Taxonomy: First record from New Caledonia by MATSUURA & TYLER (1997: 180–186). MNHN and NMNZ material. – Distribution: NC: 5, [6], [7], [8], 9, [10], [11], 12, 13. Depth: 418–920 m. Marine species.

Triacanthodes ethiops Alcock, 1894. – Taxonomy: First record from New Caledonia by FOURMANOIR & RIVATON (1979: 425). MNHN material. – Distribution: NC: 1, 2, [5], [6], [7], [8], [9], [10], [11], 12. Depth: 50–458 m. Marine species.

**Triacanthodes intermedius* Matsuura & Fourmanoir, 1984. – Taxonomy: Originally described from New Caledonia by MATSUURA & FOURMANOIR (1984: 32–34). MNHN and NSMT material. – Distribution: NC: 5, [6], [7], [8], 9, [10], [11], 12. Depth: 360–500 m. Marine species.

Balistidae

Abalistes filamentosus Matsuura & Yoshino, 2004. – Taxonomy: First record from New Caledonia by RANDALL & JUSTINE (2008). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 20–180 m. Marine species.

Abalistes stellatus (Anonymus [ex Commerson, ex Lacepède], 1798) – Baliste à trois tâches blanches, baliste de vase. – Taxonomy: First record from New Caledonia as *Balistes stellatus* by FOURMANOIR & LABOUTE (1976: 260); previously reported as *Balistes* sp. by JOUAN (1861: 246). – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 1–350 m. Transitional water and marine.

Balistapus undulatus (Park, 1797) – Baliste strié. – Taxonomy: First record from New Caledonia by PLESSIS & FOURMANOIR (1966c: 144). IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14. Depth: 1–50 m. Marine species.

Balistoides conspicillum (Bloch & Schneider, 1801) – Baliste à grandes tâches blanches, baliste lépreux. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 26) and KULBICKI et al. (1994: 38); previously reported as *Balistes niger* (non Bloch, 1786) by FOURMANOIR & LABOUTE (1976: 258–259). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, [11], 12, 14; AU: 17. Depth: 1–75 m. Marine species.

Balistoides viridescens (Bloch & Schneider, 1801) – Baliste verdâtre. – Taxonomy: First record from New Caledonia as *Balistes viridescens* by FOURMANOIR & LABOUTE (1976: 261). – Distribution: NC: 5, 6, 7, 8, [9], 10, [11], 12, 14. Depth: 0–50 m. Marine species.

Canthidermis maculata (Bloch, 1786). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 26); previously reported as *Canthidermis rotundatus* by Whitley (1961: 64). AMS material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 1–110 m. Marine species.

Melichthys niger (Bloch, 1786). – Taxonomy: **New record** from New Caledonia (northeastern lagoon, Grande Terre), based on one specimen observed at Ouasse by M. Kulbicki in 2004. – Distribution: NC: 7, 8, [9]. Depth: 0–75 m. Marine species.

Melichthys vidua (Solander in Richardson, 1844) – Baliste à queue rose. – Taxonomy: First record from New Caledonia as *Balistes vidua* by Borodin (1932: 98); subsequently reported as *Balistes radula* (non Solander in Richardson, 1848) by Fourmanoir (1971b: 115). – Distribution: NC: [5], 6, 7, 8, [9], [10], 14. Depth: 4–60 m. Marine species.

Odonus niger (Rüppell, 1836) – Baliste à dents rouges. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 26) and Fricke (1999: 580–581); previously reported as *Balistes erythrodon* by Fourmanoir & Laboute (1976: 258). – Distribution: NC: [1], 5, [6], 7, 8, [9], [10], 14. Depth: 5–40 m. Marine species.

Pseudobalistes flavimarginatus (Rüppell, 1829) – Baliste vert. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 26) and Evans (2006: 115). – Distribution: NC: 5, 6, 7, 8, [9], [10]. Depth: 2–50 m. Marine species.

Pseudobalistes fuscus (Bloch & Schneider, 1801) – Baliste jaune et bleu. – Taxonomy: First record from New Caledonia as *Balistes fuscus* by Fourmanoir & Laboute (1976: 260). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14. Depth: 5–50 m. Marine species.

Rhinecanthus aculeatus (Linnaeus, 1758) – Baliste Picasso. – Taxonomy: First record from New Caledonia as *Balistes aculeatus* by Fourmanoir & Laboute (1976: 256–257). SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], 12, 14; AU: 17. Depth: 0–50 m. Marine species.

Rhinecanthus lunula Randall & Steene, 1983. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 26) and Laboute & Grandperrin (2000: 456); previously reported as *Balistes* sp. by Jouan (1861: 246–247), and subsequently misidentified as *Rhinecanthus verrucosus* (non Linnaeus, 1758) by Fourmanoir & Laboute (1976: 261). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 10–30 m. Marine species.

Rhinecanthus rectangulus (Bloch & Schneider, 1801) – Baliste à queue cunéiforme. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 26) and Kulbicki et al. (1993: 29). SMNS material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], [11], [12], 14; AU: 17, 18; NZ: 20. Depth: 0–20 m. Marine species.

Rhinecanthus verrucosus (Linnaeus, 1758) – Baliste à bandeau noir. – Taxonomy: First record from New Caledonia by Evans (2006: 115). – Distribution: NC: [6], 7, [8], [9], [10]. Depth: 1–20 m. Marine species.

Sufflamen bursa (Bloch & Schneider, 1801) – Baliste bourse. – Taxonomy: First record from New Caledonia as *Balistes bursa* by Fourmanoir & Laboute (1976: 256). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, 11, [12], 14. Depth: 3–90 m. Marine species.

Sufflamen chrysopterum (Bloch & Schneider, 1801) – Baliste à nageoires dorées. – Taxonomy: First record from New Caledonia as *Balistes chrysopterus* by Fourmanoir & Laboute (1976: 256). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–30 m. Marine species.

Sufflamen fraenatum (Latreille, 1804) – Baliste à muselière. – Taxonomy: First record from New Caledonia as *Balistes fraenatus* by Kulbicki (1988b: 306); previously reported as *Sufflamen capistratus* by Plessis & Fourmanoir (1966c: 144). IRDNC and USNM material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], [11], [12], 14; AU: 17, 18. Depth: 8–186 m. Marine species.

Xanthichthys auromarginatus (Bennett, 1832) – Baliste jaune. – Taxonomy: First record from New Caledonia by Randall et al. (1978: 696–698); previously reported as *Xanthichthys ringens* (non Linnaeus, 1758) by Fourmanoir (1971b: 115). – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 8–150 m. Marine species.

Monacanthidae

Acreichthys radiatus (Popta, 1900). – Taxonomy: First record from New Caledonia by Tyler & Lange (1982). MNHN material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–20 m. Marine species.

Acreichthys tomentosus (Linnaeus, 1758). – Taxonomy: First record from New Caledonia by Randall (2005a: 632); previously reported as 'Monacanthidae indéterminé 1' by Laboute & Grandperrin (2000: 461). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 2–15 m. Marine species.

Aluterus monoceros (Linnaeus, 1758). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 26) and Hutchins (2001: 3636). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10], [11], [12]; AU: 17; NZ: 23. Depth: 1–50 m. Marine species.

Aluterus scriptus (Osbeck, 1765) – Baliste écriture. – Taxonomy: First record from New Caledonia as *Alutera scripta* by Fourmanoir (1971b: 115). – Distribution: NC: 5, [6], 7, 8, [9], [10], [11], [12], 14; NZ: 23. Depth: 3–120 m. Marine species.

Amanses scopas (Cuvier, 1829). – Taxonomy: First record from New Caledonia by Kulbicki & Williams (1997: 24); previously reported as *Amanses* sp. by Rivaton et al. (1990: 26). – Distribution: NC: 5, 6, 7, 8, 9, [10], 14. Depth: 1–18 m. Marine species.

Brachaluteres jacksonianus (Quoy & Gaimard, 1824). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 146). IRDNC material. – Distribution: NC: 1. Depth: 1–73 m. Transitional water and marine.

Brachaluteres taylori Woods in Schultz, Woods & Lachner, 1966. – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Kulbicki et al. (1994: 38). – Distribution: NC: 1; AU: 17; NZ: 23. Depth: 60 m. Marine species.

Cantherhines dumerilii (Hollard, 1854) – Monacanthe rayé. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 262). – Distribution: NC: 1, [6], 7, 8, 9, 10, [11], [12], 14; AU: 17. Depth: 1–35 m. Marine species.

Cantherhines fronticinctus (Günther in Playfair & Günther, 1867) – Poisson-lime à lunettes. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 459). SMNS material. – Distribution: NC: 1,

[6], [7], 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–43 m. Marine species.

Cantherhines pardalis (Rüppell, 1835). – Taxonomy: First record from New Caledonia by Fourmanoir (1976: 84). – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–20 m. Marine species.

Oxymonacanthus longirostris (Bloch & Schneider, 1801) – Baliste à tâches orange. – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS, IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 1–30 m. Marine species.

Paraluteres prionurus (Bleeker, 1851) – Monacanthe à selles noires. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 262). USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], 14. Depth: 1–25 m. Marine species.

Paramonacanthus curtorhynchos (Bleeker, 1855). – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 39–90 m. Marine species.

Paramonacanthus lowei Hutchins, 1997. – Taxonomy: First record from New Caledonia by Fricke & Kulbicki (2006: 356). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–78 m. Marine species.

Pervagor alternans (Ogilby, 1899) – Poisson-lime d'œil jaune. – Taxonomy: First record from New Caledonia by Kulbicki et al. (1994: 38). – Distribution: NC: 1, 6, 7, 8, [9], [10], [11], [12], 14; AU: 17, 18. Depth: 10–15 m. Marine species.

Pervagor aspricaudus (Hollard, 1854). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 26) and Kulbicki et al. (1994: 38). SMNS material. – Distribution: NC: 1, 6, [7], 8, [9], 10, [11], [12], 14. Depth: 1–25 m. Marine species.

Pervagor janthinosoma (Bleeker, 1854). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 26) and Kulbicki et al. (1994: 38). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 6, 7, 8, 9, [10], [11], [12], 14; AU: 17, 18. Depth: 1–20 m. Marine species.

Pervagor melanocephalus (Bleeker, 1853) – Baliste à queue rouge. – Taxonomy: First record from New Caledonia by Whitley (1961: 65). AMS, IRDNC and SMNS material. – Distribution: NC: 1, [6], 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 1–61 m. Marine species.

Pseudalutarius nasicornis (Temminck & Schlegel, 1850). – Taxonomy: First record from New Caledonia as *Pseudaluteres nasicornis* by Fourmanoir (1971b: 115). MNHN material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10]. Depth: 1–55 m. Transitional water and marine.

Thamnaconus fijiensis Hutchins & Matsuura, 1984. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 27) and Matsuura & Tyler (1997: 191–192). MNHN material. – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 150–210 m. Marine species.

Thamnaconus modestoides (Barnard, 1927). – Taxonomy: First record from New Caledonia by Matsuura & Tyler (1997: 192–193). MNHN material. – Distribution: NC: 14. Depth: 73–200 m. Marine species.

Thamnaconus tessellatus (Günther, 1880). – Taxonomy: First record from New Caledonia by Rivaton (1989: 156); previously reported as *Thamnaconus hypargyreus* (non Cope, 1871) by Rivaton et al. (1990: 27). MNHN and NMNZ material. – Distribution: NC: 1, 2, 13. Depth: 230–600 m. Marine species.

Aracanidae

Kentrocapros flavofasciatus (Kamohara, 1938). – Taxonomy: First record from New Caledonia by Rivaton (1989: 156). MNHN and NSMT material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], 12. Depth: 80–360 m. Marine species.

Ostraciidae

Lactoria cornuta (Linnaeus, 1758) – Coffre cornu. – Taxonomy: First record from New Caledonia as *Ostracion cornutus* by Jouan (1861: 247). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 1–100 m. Transitional water and marine.

Lactoria diaphana (Bloch & Schneider, 1801) – Coffre diaphane. – Taxonomy: First record from New Caledonia as *Lactoria diaphanus* by Fourmanoir & Laboute (1976: 272). IRDNC material. – Distribution: NC: 1, [6], [7], 8, [9], [10], [11], [12]; AU: 17, 18; NZ: 20, 23. Depth: 8–50 m. Marine species.

Lactoria fornasini (Bianconi, 1846). – Taxonomy: First record from New Caledonia by Fourmanoir (1971b: 115, 118). IRDNC material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], [11], [12]; AU: 17, [18]; NZ: 28. Depth: 44–92 m. Marine species.

Ostracion cubicus Linnaeus, 1758 – Coffre à points bleus. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 270–271); previously reported as *Ostracion tuberculatus* by Whitley (1961: 65). AMS, IRDNC and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17, 18; NZ: 20, 23. Depth: 0–280 m. Marine species.

Ostracion meleagris Shaw in Shaw & Nodder, 1796 – Coffre pintade. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 270). BPBM and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], 10, [11], [12], 14; AU: 17. Depth: 0–58 m. Marine species.

Ostracion solorensis Bleeker, 1853. – Taxonomy: First record from New Caledonia (northeastern Grande Terre) by Evans (2006: 116). – Distribution: NC: [6], 7, 8, [9], [10]. Depth: 1–20 m. Marine species.

Tetrosomus concatenatus (Bloch, 1785). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by Rivaton (1989: 146–147). IRDNC material. – Distribution: NC: 1; AU: 17. Depth: 0–67 m. Transitional water and marine.

Tetrosomus gibbosus (Linnaeus, 1758) – Coffre à bosse. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 270). MNHN material. – Distribution: NC: 1, 5, 6, [7], 8, [9], [10], 14. Depth: 37–110 m. Marine species.

Tetrosomus reipublicae (Ogilby, 1913). – Taxonomy: First record from New Caledonia as *Rhinesomus reipublicae* by Fourmanoir (1971b: 115, 118). – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 50–180 m. Marine species.

Triodontidae

Triodon macropterus Lesson, 1829 – Bourse. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 272). MNHN material. – Distribution: NC: 1, [6], [7], 8, [9], [10], [11], [12], 13. Depth: 1–310 m. Marine species.

Tetraodontidae

Arothron caeruleopunctatus Matsuura, 1994 – Poisson-ballon à taches bleues. – Taxonomy: First record from New Caledonia by Laboute & Grandperrin (2000: 466). – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 2–50 m. Marine species.

Arothron firmamentum (Temminck & Schlegel, 1850). – Taxonomy: First record from New Caledonia by Matsuura & Tyler (1997: 199–200). NMNZ material. – Distribution: NC: 13; NZ: 19, 23, 26. Depth: 10–360 m. Marine species.

Arothron hispidus (Linnaeus, 1758) – Ballon à épaule noire. – Taxonomy: First record from New Caledonia as *Tetraodon hispidus* by Fourmanoir (1971b: 115); previously reported as *Ovoides implutus* by Whitley (1961: 65). AMS and USNM material. – Distribution: NC: 5, 6, 7, 8, [9], [10], 11, 12, 14; AU: 17. Depth: 1–50 m. Transitional water and marine.

Arothron immaculatus (Bloch & Schneider [ex Lacepède], 1801). – Taxonomy: First record from New Caledonia by Wantiez & Kulbicki (1995: 227). – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 0–17 m. Transitional water and marine.

Arothron manilensis (Procé, 1822) – Ballon à lignes brunes. – Taxonomy: First record from New Caledonia by Thollot & Kulbicki (1988: 618); previously misidentified as *Arothron immaculatus* (non Bloch & Schneider [ex Lacepède], 1801) by Fourmanoir & Laboute (1976: 266). IRDNC and USNM material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–20 m. Transitional water and marine.

Arothron mappa (Lesson, 1831) – Ballon griffonné. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 266). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 1–30 m. Marine species.

Arothron meleagris (Lacepède [ex Commerson], 1798) – Ballon pintade. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 266). – Distribution: NC: 5, 6, 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 2–24 m. Marine species.

Arothron nigropunctatus (Bloch & Schneider, 1801) – Ballon maculé. – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 268). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14. Depth: 3–25 m. Marine species.

Arothron reticularis (Bloch & Schneider, 1801). – Taxonomy: First record from New Caledonia as *Tetraodon reticularis* by Fourmanoir (1971b: 115). Record from Baie de Prony based on a photograph taken by R. Myers (personal communication, March 2010). – Distribution: NC: [6], [7], 8, [9], 10. Depth: 1–25 m. Transitional water and marine.

Arothron stellatus (Bloch & Schneider, 1801) – Ballon étoilé. – Taxonomy: First record from New Caledonia as *Tetraodon stellatus* by Fourmanoir (1971b: 115); subsequently reported as *Arothron alboreticulatus* by Fourmanoir & Laboute (1976: 266). – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], [11], [12], 14; AU: 17, [18]; NZ: 23. Depth: 1–58 m. Marine species.

Canthigaster amboinensis (Bleeker, 1864). – Taxonomy: First record from New Caledonia by Evans (2006: 116). SMNS material. – Distribution: NC: [6], 7, 8, [9], [10], 14. Depth: 0–16 m. Marine species.

Canthigaster axiologus Whitley, 1931 – Canthigaster à quatres barres. – Taxonomy: First record from New Caledonia by Randall et al. (2008: 6–7); previously reported as *Canthigaster coronatus* (non Vaillant & Sauvage, 1875) by Fourmanoir & Laboute (1976: 269). IRDNC material. – Distribution: NC: 1, [6], 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 10–76 m. Marine species.

Canthigaster bennetti (Bleeker, 1854). – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 268). IRDNC and SMNS material. – Distribution: NC: 1, 5, 6, 7, 8, 9, [10], 11, 12, 14; AU: 17. Depth: 0–16 m. Marine species.

Canthigaster callisterna (Ogilby, 1889). – Taxonomy: First record from New Caledonia (Norfolk Ridge) by Matsuura & Tyler (1997: 200–201). NMNZ material. – Distribution: NC: 13; AU: 17, 18; NZ: 20, 23. Depth: 230–250 m. Marine species.

Canthigaster compressa (Procé, 1822) – Canthigaster ocellé. – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 75) and Kulbicki & Wantiez (1990: 125, 129); previously reported as *Canthigaster striolatus* by Fourmanoir (1981: 28). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], 10, [11], [12]. Depth: 5–16 m. Marine species.

Canthigaster epilampra (Jenkins, 1903). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 75) and Myers (1999: 290). – Distribution: NC: [6], [7], 8, [9], [10], 14. Depth: 6–60 m. Marine species.

Canthigaster janthinoptera (Bleeker, 1855). – Taxonomy: First record from New Caledonia by Rivaton et al. (1990: 75) and Kulbicki et al. (1994: 39). IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 0–30 m. Marine species.

Canthigaster ocellicincta Allen & Randall, 1977. – Taxonomy: Recorded from New Caledonia in original description by Allen & Randall (1977: 485–486). MNHN material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 10–53 m. Marine species.

Canthigaster papua (Bleeker, 1848). – Taxonomy: First record from New Caledonia by Randall et al. (1997: 477). SMNS material. – Distribution: NC: [6], [7], 8, [9], [10], [11], 12. Depth: 2–50 m. Marine species.

Canthigaster rivulata (Temminck & Schlegel, 1850). – Taxonomy: First record from New Caledonia as *Canthigaster rivulatus* by Rivaton (1989: 147). MNHN material. – Distribution: NC: 1, 5, [6], [7], 8, [9], [10], 11, [12], 14. Depth: 0–350 m. Marine species.

Canthigaster solandri (Richardson [ex Solander], 1845). – Taxonomy: First record from New Caledonia by Fourmanoir & Laboute (1976: 269). SMNS material. – Distribution: NC: 6, 7, 8, 9, [10], 11, 12, 14. Depth: 0–36 m. Marine species.

Canthigaster valentini (Bleeker, 1853) – Canthigaster à selles noires. – Taxonomy: First record from New Caledonia by

FOURMANOIR & LABOUTE (1976: 269). AMS, IRDNC, SMNS and USNM material. – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, 12, 14; AU: 17. Depth: 0–91 m. Marine species.

Chelonodon patoca (Hamilton, 1822). – Taxonomy: First record from New Caledonia (Grande Terre) by FRICKE & KULBICKI (2006: 357). AMS material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 4–60 m. Freshwater, transitional water and marine.

Lagocephalus sceleratus (Gmelin, 1789) – Ballon à bandes argentées, ballon scélérat. – Taxonomy: First record from New Caledonia as *Pleuranacanthus scleratus* by WHITLEY (1961: 65). AMS and IRDNC material. – Distribution: NC: 1, 5, [6], 7, 8, [9], [10], [11], [12], 14; AU: 17. Depth: 18–100 m. Marine species.

Sphoeroides pachygaster (Müller & Troschel in Schomburgk, 1848). – Taxonomy: First record from New Caledonia by RIVATON (1989: 156); previously reported as *Tetraodon testudineus* (non Linnaeus, 1758) by PLESSIS & FOURMANOIR (1966c: 144). MNHN and NMNZ material. – Distribution: NC: 1, 2, [6], [7], 8, [9], [10], [11], [12], 13. Depth: 50–480 m. Marine species.

Torquigener brevipinnis (Regan, 1903). – Taxonomy: First record from New Caledonia by MATSUURA & TYLER (1997: 203). MNHN and NSMT material. – Distribution: NC: 5. Depth: 20–100 m. Marine species.

Torquigener hypselogeneion (Bleeker, 1852). – Taxonomy: First record from New Caledonia as *Amblyrhynchotes hypselogeneion* by RIVATON et al. (1990: 75) and KULBICKI & WANTIEZ (1990: 125). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10]. Depth: 18–22 m. Marine species.

Torquigener pallimaculatus Hardy, 1983. – Taxonomy: First record from New Caledonia by RIVATON (1989: 147). IRDNC material. – Distribution: NC: 1. Depth: 7–78 m. Marine species.

Torquigener tuberculiferus (Ogilby, 1912). – Taxonomy: First record from New Caledonia (Chesterfield Islands) by KULBICKI et al. (1994: 39). IRDNC material. – Distribution: NC: 1. Depth: 73–80 m. Marine species.

Tylerius spinosissimus (Regan, 1908). – Taxonomy: First record from New Caledonia by MATSUURA & TYLER (1997: 204–205). MNHN and NSMT material. – Distribution: NC: 5, [6], [7], [8], 9, [10]. Depth: 250–435 m. Marine species.

Diodontidae

Chilomycterus reticulatus (Linnaeus, 1758). – Taxonomy: **New record** from New Caledonia (Grande Terre), based on video seen on Youtube taken near Nouméa (Anonymous 2009a), and on one specimen observed near Koné by M. KULBICKI. – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17; NZ: 23. Depth: 20–100 m. Marine species.

Cyclichthys orbicularis (Bloch, 1785). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 37) and LEIS (2001: 3662). IRDNC material. – Distribution: NC: 5, [6], [7], 8, [9], [10], [11], [12]; AU: 17. Depth: 9–170 m. Marine species.

Cyclichthys spilostylus (Leis & Randall, 1982). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 37) and THOLLOT (1996a: 15). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 3–90 m. Marine species.

Diodon holocanthus Linnaeus, 1758 – Poisson porc-épic. – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 37) and KULBICKI et al. (1994: 39). USNM material. – Distribution: NC: 1, [6], [7], 8, [9], 10, [11], [12]; AU: 17. Depth: 0–200 m. Marine species.

Diodon hystrix (Linnaeus, 1758) – Poisson porc-épic. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 270). – Distribution: NC: 1, 5, 6, 7, 8, 9, 10, 11, [12], 14; AU: 17, 18; NZ: 20. Depth: 0–50 m. Marine species.

Diodon liturosus Lacepède in Shaw, 1804 – Poisson porc-épic. – Taxonomy: First record from New Caledonia by FOURMANOIR & LABOUTE (1976: 270). – Distribution: NC: 5, 6, 7, 8, [9], [10], 14. Depth: 0–90 m. Marine species.

Lophodiodon calori (Bianconi, 1855). – Taxonomy: First record from New Caledonia by RIVATON et al. (1990: 37), RIVATON & RICHER DE FORGES (1990: 28), and FRICKE & KULBICKI (2006: 357). IRDNC material. – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 0–100 m. Marine species.

Molidae

Masturus lanceolatus (Liénard, 1840). – Taxonomy: First record from New Caledonia by FOURMANOIR (1976: 84). – Distribution: NC: [6], [7], 8, [9], [10]. Depth: 50–670 m. Marine species.

Mola mola (Linnaeus, 1758). – Taxonomy: First record from New Caledonia by FOURMANOIR (1971b: 115). – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; NZ: 20. Depth: 0–480 m. Marine species.

Mola ramsayi (Giglioli, 1883). – Taxonomy: First record from New Caledonia by FRICKE & KULBICKI (2006: 357); previously reported as *Mola* sp. by FOURMANOIR (1971b: 115). – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; AU: 17; NZ: 23, 24, 25. Depth: 0–300 m. Marine species.

Ranzania laevis (Pennant, 1776). – Taxonomy: First record from New Caledonia by FOURMANOIR (1971b: 115). – Distribution: NC: [6], [7], 8, [9], [10], [11], [12]; NZ: 23. Depth: 0–140 m. Marine species.

4 The fish fauna of New Caledonia and its endemism

The fish fauna of New Caledonia comprises a total of 2328 species in 246 families. Eight of these species are not native, but have been introduced. Five fish families are represented only by introduced species. The native fish fauna of New Caledonia therefore consists of 2320 species in 241 families. The largest families are the Gobiidae (192 native species, 8.3 % of the native species), Labridae (129 species, 5.6 %), Pomacentridae (113 species, 4.9 %), Serranidae (95 species, 4.1 %), Apogonidae (81 species, 3.5 %), Blenniidae (64 species, 2.8 %), Macrouridae (52 species, 2.2 %), Myctophidae (52 species, 2.2 %), Scorpaenidae (52 species, 2.2 %), Muraenidae (49 species, 2.1 %), Lutjanidae (43 species each, 1.9 %), Carangidae (42 species, 1.8 %), Syngnathidae (43 species, 1.9 %) and Acanthuridae (40 species, 1.7 %). Typically for remote tropical island

groups, the freshwater fish fauna is dominated by the families Gobiidae, Eleotridae, Anguillidae and Mugilidae; the most speciate marine fish groups are the Gobiidae, Labridae, and Pomacentridae. A total of 61 fish species are recorded from New Caledonia for the first time.

The fish fauna of New Caledonia includes a total of 125 species occurring in freshwater (plus 8 introduced species, 6.4 % of the total freshwater fish species), 266 species of transitional waters (plus two introduced species, 0.8 % of the total transitional water species) and 2320 species in marine habitats. Freshwater and transitional water species are found almost exclusively in the Grande Terre Group, as there are no open fresh water habitats in the outer islands.

Among the marine species, 905 species are recorded from islands and reefs of the East Coral Sea (including Chesterfield Islands) (39.1 % of the total marine species), 193 pelagic and deepsea species are known from the New Caledonian basin (8.3 % of the total marine species), 1860 species from the Grande Terre Group (80.3 % of the total marine species), 85 species from the Norfolk Ridge (3.7 % of the total marine species), and 1029 species from the Loyalty Ridge including Loyalty Islands (42.3 % of the total marine species). The Grande Terre Group includes many species living otherwise along continental shelves, which prefer nutrient rich waters. In the Loyalty Islands, several species restricted to oceanic islands including so-called 'Pacific Plate species' are found; such species require marine habitats with few nutrients. Many of the latter species, especially in deeper water, are small.

It is difficult to compare the faunas of nearby regions as the sampling effort is very heterogeneous from one region to the next. Restricting the comparison to the coastal species (marine species, found in less than 80 m excluding oceanic pelagic species) there is a very high similarity in the ranking of the various families (Tab. 1). The only exception being the Northern New Zealand Region which is at the limit of the tropical waters and therefore has less species and is influenced by the occurrence of colder waters. There are also several important families which are not represented or weakly represented in New Caledonia compared to the western and northern regions (Great Barrier Reef, Papua New Guinea and Solomon Islands). In particular there are no Ariidae or Sciaenidae in New Caledonia and families such as Platycephalidae, Soleidae, Sillaginidae, Syngnathidae, Siganidae, Pseudochromidae, Chaetodontidae and Hemiramphidae have less species than in the west and north. On the contrary, several families are

Tab. 1. Proportion (percent of total) and rank (in parentheses) of the 20 most speciose families of shore fishes in the southwestern Pacific. Only "shore" species are included, i. e. species which are marine, live in less than 80 m depth and are not found as adults in the oceanic pelagic waters.

	New Caledonia	Vanuatu	Great Barrier Reef	Papua New Guinea	Solomon Islands	Northern New Zealand	Fiji	Tonga
Gobiidae	11.9 (1)	9.5 (1)	10.4 (1)	10.4 (1)	11.7 (1)	6.3 (2)	11.6 (1)	11.2 (1)
Labridae	7.2 (2)	8.5 (2)	6.5 (2)	6 (2)	6.4 (3)	12.5 (1)	6.9 (2)	7.9 (2)
Pomacentridae	5.8 (3)	8.1 (3)	5.3 (3)	5.5 (3)	7.2 (2)	6.3 (2)	5.6 (3)	7.1 (3)
Apogonidae	4.9 (4)	4.4 (6)	3.9 (5)	5.3 (4)	5.9 (4)	2.6 (10)	5 (4)	5.2 (5)
Serranidae	4.7 (5)	5.2 (4)	4.3 (4)	4.1 (5)	4.4 (6)	4.9 (4)	4.7 (5)	4.6 (6)
Blenniidae	4 (7)	4.5 (5)	3.1 (6)	3.6 (6)	4.7 (5)	4.3 (5)	4.5 (6)	5.4 (4)
Muraenidae	4.4 (6)	3.4 (7)	2.2 (10)	2.3 (10)	2.3 (10)	2.9 (9)	3.4 (7)	3.9 (7)
Carangidae	2.1 (10)	2.8 (9)	3 (7)	2.4 (8)	3 (7)	2.5 (11)	2.9 (8)	2.9 (10)
Syngnathidae	2.4 (9)	1.9 (15)	2.9 (8)	2.7 (7)	2.5 (8)	1.2 (19)	2.8 (9)	1.9 (15)
Chaetodontidae	1.7 (12)	2.6 (10)	2.1 (11)	2.1 (11)	2.4 (9)	4 (6)	2.3 (11)	3.1 (8)
Scorpaenidae	3.1 (8)	2 (14)	2.2 (9)	2.3 (9)	1.9 (13)	2.3 (12)	2.5 (10)	1.5 (16)
Acanthuridae	2.1 (11)	2.9 (8)	1.8 (12)	1.6 (13)	2.2 (11)	3.5 (7)	2.2 (12)	3.1 (8)
Lutjanidae	1.5 (17)	2.6 (10)	1.4 (16)	1.7 (12)	2.1 (12)	1.4 (18)	2.2 (12)	2.1 (13)
Scaridae	1.5 (14)	2.2 (13)	1.4 (16)	1.3 (18)	1.5 (15)	3.2 (8)	1.7 (16)	2.6 (11)
Holocentridae	1.5 (14)	1.9 (15)	1.2 (19)	1.3 (18)	1.7 (14)	1.1 (21)	1.9 (15)	2.5 (12)
Tripterygiidae	1.6 (13)	2.6 (12)	1.5 (15)	1.5 (14)	1.3 (17)	0.8 (25)	1.3 (21)	2.1 (13)
Tetraodontidae	1.5 (14)	1.3 (20)	1.5 (14)	1.4 (15)	1.1 (20)	1.8 (14)	1.4 (18)	1.4 (17)
Ophichthidae	1.3 (18)	1 (22)	1.2 (19)	1 (25)	1 (23)	1.6 (15)	2.1 (14)	1.4 (20)
Pomacanthidae	1.1 (22)	1.7 (17)	1.2 (23)	1.1 (23)	1.4 (16)	1.6 (15)	1.4 (18)	1 (23)
Lethrinidae	1.2 (20)	1.5 (18)	1.1 (24)	1.1 (22)	1.1 (21)	0.9 (22)	1.6 (17)	1.4 (20)
Total number of species	1851	1306	2161	2298	1757	710	1462	1067

well represented, Balistidae, Muraenidae and Scorpaenidae have more species than in any other country in the southwestern Pacific.

New Caledonia has a considerable endemic element of 107 species known to date (4.6 % of the total native species). Among the known endemic species, 47 occur at the Grande Terre Group (43.9 % of the total endemic species), 18 in the eastern Coral Sea (16.8 %), 6 on the Loyalty Ridge (5.6 %), and 11 on the Norfolk Ridge (10.3 %). The remaining endemic species occur in more than one subregion. The high number of Grande Terre Group endemics is correlated with an old geological age and a long isolation of that group (separated since 68 million years, see FRICKE 1997: 49). Due to the high percentage of endemic species, New Caledonia is considered as an endemism centre.

Endemic species are distributed amongst 41 families. However only six families have five or more endemic species (Tab. 2). The proportion of endemic species also displays an unusual pattern. The highest proportions are found among bottom dwelling species, especially flatfishes and Callionymidae. Most endemic species are small (some less than 15 cm standard length, most even less than 10 cm), with some exceptions among the Chondrichtyans. Many important families such as the Pomacentridae, Muraenidae, Scorpaenidae, Acanthuridae, Blenniidae, Carangidae, Lutjanidae have no endemic species in New Caledonia. However, it should be noticed that the proportion of endemic species is significantly higher among deep water species and species recently described. This effect is probably linked to sampling effort, as deep water species have not been well sampled in most regions around New Caledonia and recently described species are likely to be found in other regions once more material becomes available. Compared to other areas in the southwestern Pacific, New Caledonia has a higher proportion of endemic species than regions to the north and east (Papua New Guinea, Solomon Islands, Vanuatu, Fiji or Tonga), similar to the Great Barrier Reef, but lower than the Northern New Zealand Region (Lord Howe Island, Norfolk, Island Elizabeth and Middleton Reef, Kermadec Islands).

Several species are not endemic to New Caledonia but have not been recorded from other parts of the southwestern Pacific. There is not enough information on the geographical distribution of deepwater and pelagic species, but 60 shore fish species (marine species living in less than 80 m and not living as adults in oceanic pelagic waters) have this pattern. The majority (45 species) of these species are small (less than 10 cm). Some of them are otherwise known only from the tropical northern hemisphere (Japan, Taiwan, Hawaii), and such species were defined as antitropical/antiequatorial by RANDALL (1982). It is possible that some of these species are either misidentifications or represent cryptic species.

Zoogeographically, the shallow ichthyofauna of the Chesterfield Islands has close affinities with the Great Barrier Reef and reefs in the West Coral Sea; however, a few species have a bipolar, antiequatorial distribution, with a distribution range at the Chesterfield Islands and in the Western North Pacific Ocean. In the Grande Terre Group, we find affinities with eastern Australia, New Guinea, and Vanuatu. In southern Grande Terre and the Île des Pins, several southwestern Pacific island endemics are found, which are otherwise distributed at Lord Howe and Norfolk islands. The (deepwater) Norfolk Ridge ichthyofauna has close affinities with northern New Zealand, and with the neighbouring Lord Howe Rise. Finally, the Loyalty Ridge ichthyofauna is similar to Vanuatu, Fiji, and islands on the Pacific Plate; there is also a faunal similarity with some reefs of northern (and especially northeastern) Grande Terre.

Tab. 2. Number of New Caledonian endemic fish species per family. Only families with at least two endemic species are included.

Family	Endemic species in family	Total species in family	Percentage of endemic species in family
Bothidae	10	35	28.6
Gobiidae	9	190	4.7
Macrouridae	9	52	17.3
Callionymidae	8	24	33.3
Samaridae	5	9	55.6
Syngnathidae	5	43	11.6
Serranidae	4	95	4.2
Triglidae	4	12	33.3
Apogonidae	3	81	3.7
Congridae	3	23	13.0
Ophichthidae	3	24	12.5
Scyliorhinidae	3	4	75.0
Sparidae	3	4	75.0
Urolophidae	3	3	100.0
Bythitidae	2	8	25.0

5 References

AARN [no initial] & IVANTSOFF, W. (2009): Description of a new subfamily, genus and species of a freshwater atherinid, *Bleheratherina pierucciae* (Pisces: Atherinidae) from New Caledonia. – Aqua, Journal of Ichthyology and aquatic Biology **15**: 1–24.

AKAZAKI, M. & SÉRET, B. (1999): *Dentex fourmanoiri*, a new species of sea bream (Sparidae: Denticinae) from off New Caledonia. – In: SÉRET B. & SIRE, J.-Y. (eds.): Proceedings of the 5th Indo-Pacific Fish Conference, Nouméa 1997, pp. 177–183; Nouméa (O. R. S. T. O. M.).

AKIMOTO, S., ITOI, S., SEZAKI, K., BORSA, P. & WATABE, S. (2006): Identification of alfonsino, *Beryx mollis* and *B. splendens* collected in Japan, based on the mitochondrial cytochrome

b gene, and their comparison with those collected in New Caledonia. – Fisheries Science **72**: 202–207.

Allen, G. R. (1972): The Anemonefishes, their classification and biology, 288 pp.; Neptune City (T. F. H. Publications) [Revised 2nd edition 1975, 352 pp.].

Allen, G. R. (1975): Damselfishes of the South Seas; 240 pp.; Neptune City (T. F. H. Publications).

Allen, G. R. (1987a): Synopsis of the circumtropical fish genus *Lutjanus* (Lutjanidae). – In: Polovina, J. J. & Ralston, S. (eds.): Tropical snappers and groupers. Biology and fishery management, pp. 33–87, pls. 1–8; Boulder, London (Westview Press).

Allen, G. R. (1987b): New Australian fishes. Part 3. A new species of *Pomacentrus* (Pomacentridae). – Memoirs of the Museum of Victoria **48**: 9–11.

Allen, G. R. (1991): Damselfishes of the World, 271 pp.; Melle (Mergus).

Allen, G. R. (1999b): Apogonidae. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2602–2610; Rome (FAO).

Allen, G. R., Hoese, D. F., Paxton, J. R., Randall, J. E., Russell, B. C., Starck, W. A. II, Talbot, F. H. & Whitley, G. P. (1976): Annotated checklist of the fishes of Lord Howe Island. – Records of the Australian Museum **30**: 365–454.

Allen, G. R. & Randall, J. E. (1977): Review of the sharpnose pufferfishes (subfamily Canthigasterinae) of the Indo-Pacific. – Records of the Australian Museum **30**: 475–517.

Allen, G. R. & Randall, J. E. (2002a): A new species of wrasse (Labridae: *Choerodon*) from the tropical western Pacific. – Aqua, Journal of Ichthyology and aquatic Biology **5**: 109–113.

Allen, G. R. & Randall, J. E. (2002b): Four new Indo-Pacific species of cardinalfishes (Apogonidae). – Aqua, Journal of Ichthyology and aquatic Biology **5**: 115–126.

Allen, G. R. & Randall, J. E. (2002c): A review of the *leucogaster* species complex of the Indo-Pacific pomacentrid genus *Amblyglyphidodon*, with descriptions of two new species. – Aqua, Journal of Ichthyology and aquatic Biology **5**: 139–152.

Amaoka, K. & Mihara, E. (2000): Pisces Pleuronectiformes: Flatfishes from New Caledonia and adjacent waters. Genus *Arnoglossus*. – In: Crosnier, A. (ed.): Résultats des campagnes MUSORSTOM, vol. 21. – Mémoires du Muséum national d'Histoire naturelle (A) Zoologie **184**: 783–813.

Amaoka, K. & Mihara, E. (2001): *Asterorhombus annulatus* (Weber, 1913), a valid species distinct from *Asterorhombus intermedius* (Bleeker, 1865) (Pleuronectiformes: Bothidae). – Ichthyological Research **48**: 192–196.

Amaoka, K., Mihara, E. & Rivaton, J. (1993): Pisces, Pleuronectiformes: Flatfishes from the waters around New Caledonia. A revision of the genus *Engyprosopon*. – In: Crosnier, A. (ed.): Résultats des campagnes MUSORSTOM, vol. 11. – Mémoires du Muséum national d'Histoire naturelle **158**: 377–426.

Amaoka, K., Mihara, E. & Rivaton, J. (1997): Pisces, Pleuronectiformes: Flatfishes from the waters around New Caledonia. Six species of the bothid genera *Tosarhombus* and *Parabothus*. – In: Séret, B. (ed.): Résultats des campagnes MUSORSTOM, vol. 17. – Mémoires du Muséum national d'Histoire naturelle **174**: 143–172.

Amaoka, K. & Rivaton, J. (1991): Pisces Pleuronectiformes: A review of the genus *Tosarhombus* (Bothidae) with descriptions of two new species from Saya de Malha Bank (Indian Ocean) and the Chesterfield Islands (Coral Sea). – In: Crosnier, A. (ed.): Résultats des campagnes MUSORSTOM, vol. 8. – Mémoires du Muséum national d'Histoire naturelle (A) Zoologie **151**: 449–466.

Anderson, M. E. & Leslie, R. W. (2001): Review of the deep-sea anglerfishes (Lophiiformes: Ceratioidei) of southern Africa. – Ichthyological Bulletin, J. L. B. Smith Institute of Ichthyology **70**: 1–32.

Anderson, W. D., Jr. & Allen, G. R. (2001): Lutjanidae. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 5. Bony fishes part 3 (Menidae to Pomacentridae), pp. 2840–2918, pls. 5–10; Rome (FAO).

Anderson, W. D., Jr. & Springer, V. G. (2005): Review of the perciform fish genus *Symphysanodon* Bleeker (Symphysanodontidae), with descriptions of three new species, *S. mona*, *S. parini*, and *S. rhax*. – Zootaxa **996**: 1–44.

Anonymous (2009a): Underwater video by 'jscratch69' of coral reef fishes taken at Nouméa, Grande Terre, New Caledonia; seen in the internet on YouTube on 19 March 2009. – http://www.youtube.com/watch?v=-dlDeieDU04.

Anonymous (2009b): Underwater video taken at the Île des Pins, New Caledonia; seen in the internet on YouTube on 19 March 2009. – http://www.youtube.com/watch?v=4-rf-DkEbUA.

Anonymous (2009c): Underwater video taken at Ouvéa, Loyalty Islands, New Caledonia, seen in the internet on YouTube on 19 March 2009. – http://www.youtube.com/watch?v=NLBCSVGae5Q.

Aonuma, Y., Yoshino, T. & Ida, H. (1996): First record of the gobiid fish, *Priolepis fallacincta*, from Japan. – Ichthyological Research **43**: 325–328.

Arai, M. & Amaoka, K. (1996): *Arnoglossus macrolophus* Alcock (Pleuronectiformes: Bothidae), a valid species distinct from *A. tapeinosomus* (Bleeker). – Ichthyological Research **43**: 359–365.

Bath, H. (1989): Eine weitere Unterart von *Parablennius tasmanianus* (Richardson, 1849) (Pisces: Blenniidae). – Senckenbergiana Biologica **69**: 293–300.

Bath, H. (2004): Revision of the genus *Rhabdoblennius* Whitley (Pisces: Blenniidae: Salariinae), with descriptions of two new species. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **669**: 26 pp.

Bath, H. (2008): Review of the genus *Parablennius* Miranda-Ribeiro from Australia and New Caledonia (Pisces: Blenniidae: Salariinae). – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **1**: 77–94.

Bauchot, M.-L. (1959): Etude des larves leptocephales du groupe *Leptocephalus lanceolatus* Strömman et identification à la famille des Serrivomeridae. – Dana Report **48**: 1–148, pls. 1–2.

Béarez, P. (2003): Premier signalement de *Scolopsis taeniopterus* (Nemipteridae) et de *Gymnocranius elongatus* (Lethrinidae) en Nouvelle-Calédonie. – Cybium **27**: 61–62.

Bellwood, D. R. (2001): Scaridae Parrotfishes. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO Species Identification Guide for Fishery Purposes. The living marine resources of the Western Central Pacific. Vol. 6. Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles, sea turtles, sea snakes and marine mammals, pp. 3468–3492, pls. 6–13; Rome (FAO).

Ben-Tuvia, A. (1993): A review of the Indo-West Pacific congrid fish genera *Rhynchoconger* and *Bathycongrus* with the description of three new species. – Israel Journal of Zoology **39**: 349–370.

Bertelsen, E., Krefft, G. & Marshall, N. B. (1976): The fishes of the family Notosudidae. – Dana Report **86**: 1–114, pl. 1.

Bloch, M. E. & Schneider, J. G. (1801): M. E. Blochii, doctoris medicinae Berolinensis, et Societatibus Literariis multis adscripti, systema ichthyologiae iconibus CX illustratum. Post obitum auctoris opus inchoatum absolvit, correxit, interpolavit Jo. Gottlob Schneider, Saxo, LX + 584 pp., 110 pls.; Berolini [Berlin] (Sander).

Böhlke, E. B. & Randall, J. E. (2000): A review of the moray eels (Anguilliformes: Muraenidae) of the Hawaiian Islands, with description of two new species. – Proceedings of the Academy of Natural Sciences of Philadelphia **150**: 203–278, pls. 1–9.

Borodin, N. A. (1932): Scientific results of the Yacht "Alva" world cruise, July, 1931 to March, 1932, in command of William K. Vanderbilt. Fishes. – Bulletin of the Vanderbilt marine Museum **1**: 65–101.

Borsa, P., Béarez, P. & Chen, W.-J. (2010): *Gymnocranius oblongus*, a new large-eye bream species from New Caledonia (Teleostei: Lethrinidae). – Comptes Rendus Biologies **333**: 241–247 [Electronic prepublication was available in December 2009].

Briggs, J. C. (1955): A monograph of the clingfishes (order Xenopterygii). – Stanford ichthyological Bulletin **6**: IV + 224 pp.

Burridge, C. P. (2002): Antitropicality of Pacific fishes: molecular insights. – Environmental Biology of Fishes **65**: 151–164.

Burridge, C. P. (2004): *Cheilodactylus (Goniistius) francisi*, a new species of morwong (Perciformes: Cirrhitoidea) from the Southwest Pacific. – Records of the Australian Museum **56**: 231–234.

Caraguel, C. & Iglésias, S. P. (2004): Premier signalement du requin tisserand, *Carcharhinus brevipinna* (Chondrichthys: Carcharhinidae) pour la Nouvelle-Calédonie. – Cybium **28**: 369–371.

Carpenter, K. E. (2001a): Emmelichthyidae. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 5. Bony fishes part 3 (Menidae to Pomacentridae), pp. 2838–2839; Rome (FAO).

Carpenter, K. E. (2001b): Lethrinidae. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 5. Bony fishes part 3 (Menidae to Pomacentridae), pp. 3004–3050, pls. 17–19; Rome (FAO).

Carpenter, K. E. & Randall, J. E. (2003): *Lethrinus ravus*, a new species of emperor fish (Perciformes: Lethrinidae) from the western Pacific and eastern Indian Oceans. – Zootaxa **240**: 1–8.

Castelnau, F. L. (1873): Contribution to the ichthyology of Australia. Nos. III–IX [with subtitles, indexed as one work]. – Proceedings of the zoological Acclimatisation Society of Victoria **2**: 37–158.

Castle, P. H. J. (1963): The systematics, development and distribution of two eels of the genus *Gnathophis* (Congridae) in Australasian waters. – Zoology Publications from Victoria University of Wellington **34**: 15–47.

Castle, P. H. J. (1964): Congrid leptocephali in Australasian waters with descriptions of *Conger wilsoni* (Bl. and Schn.) and *C. verreauxi* Kaup. – Zoology Publications from Victoria University of Wellington **37**: 1–45.

Castle, P. H. J. (1966): Les leptocéphales dans le Pacifique sud-ouest. – Cahiers de l'O. R. S. T. O. M., Série Océanographie **4**: 51–71.

Castle, P. H. J. (1967): Heterocongrine eels in the southwest Pacific. – Records of the Dominion Museum **6** (2): 5–12.

Castle, P. H. J. & Bearez, P. (1995): Two new species of *Myroconger* (Anguilliformes, Myrocongridae) from the Pacific Ocean. – Cybium **19**: 211–222.

Castle, P. H. J. & Randall, J. E. (1999): Revision of Indo-Pacific garden eels (Congridae: Heterocongrinae), with descriptions of five new species. – Indo-Pacific Fishes **30**: 1–52, pls. 1–3.

Castle, P. H. J. & Smith, D. G. (1999): A reassessment of the eels of the genus *Bathycongrus* in the Indo-West Pacific. – Journal of Fish Biology **54**: 973–995.

Cerro, L. del & Lloris, D. (1997): Gurnard fishes (Scorpaeniformes, Triglidae) from off New Caledonia, with description of five new species. – In: Séret, B. (ed.): Résultats des campagnes MUSORSTOM, vol. 17. – Mémoires du Muséum national d'Histoire naturelle **174**: 91–124.

Chen, I.-S., Séret, B., Pöllabauer, C. & Shao, K.-T. (2001): *Schismatogobius fuligimentus*, a new species of freshwater goby (Teleostei: Gobiidae) from New Caledonia. – Zoological Studies **40**: 141–146.

Clarke, T. A. (1999): Pelagic fishes of the genus *Eustomias* (Melanostomiidae) similar to *Eustomias dendriticus* Regan and Trewavas with the description of seven new species. – Copeia **1999**: 1002–1013.

Clarke, T. A. (2001): Pelagic fishes of the genus *Eustomias*, subgenus *Dinematochirus* (Stomiidae), in the Indo-Pacific with the description of twelve new species. – Copeia **2001**: 683–699.

Collette, B. B. (1999a): Belonidae. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2151–2161; Rome (FAO).

Collette, B. B. (1999b): Hemiramphidae. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2180–2196; Rome (FAO).

Compagno, L. J. V. (2001): Sharks of the world. An annotated and illustrated catalogue of shark species known to date. Vol. 2. Bullhead, mackerel and carpet sharks (Heterodontiformes, Lamniformes and Orectolobiformes), VIII + 269 pp.; Rome [FAO Species Catalogue for Fishery Purposes 1 (2)].

Compagno, L. J. V. & Last, P. R. (1999a): Anacanthobatidae. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the western Central Pacific. Vol. 3. Batoid fishes, chimaeras and bony fishes part 1 (Elopidae to Linophrynidae), pp. 1462–1466; Rome (FAO).

Compagno, L. J. V., Last, P. R., Séret, B. & Carvalho, M. R. de (1999): Batoid fishes. List of families and species occurring in the area. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the western Central Pacific. Vol. 3. Batoid fishes, chimaeras and bony fishes part 1 (Elopidae to Linophrynidae), pp. 1406–1409; Rome (FAO).

Conand, F. (1985): Biology of the small pelagic fishes of the lagoon of New Caledonia used as bait fish for tuna fishing. – Proceedings of the 5th international Coral Reef Congress, Tahiti **5**: 463–467.

Danois, Y. le (1964): Étude anatomique et systématique des Antennaires, de l'ordre des Pédiculates. – Mémoires du Muséum national d'Histoire naturelle (A) Zoologie **31**: 1–162.

Dawson, C. E. (1982): Review of the Indo-Pacific pipefish genus *Trachyrhamphus* (Syngnathidae). – Micronesica **18**: 163–191.

Dawson, C. E. (1985): Indo-Pacific pipefishes (Red Sea to the Americas), 230 pp., 1 pl.; Ocean Springs, Mississippi (Gulf Coast Research Laboratory).

Dawson, C. E. & Fourmanoir, P. (1981): *Microphis cruentus*, a new doryrhamphine pipefish (Syngnathidae) from New Caledonia. – Micronesica **17**: 113–118.

Delannoy, L. (1991): [*Tosarhombus novaensis*]. – Les Nouvelles Calédoniennes, 20 Jan. 1991.

Didier, D. A. (2002): Two new species of chimaeroid fishes from the southwestern Pacific Ocean (Holocephali, Chimaeridae). – Ichthyological Research **49**: 299–306.

Didier, D. A. & Séret, B. (2002): Chimaeroid fishes of New Caledonia with description of a new species of *Hydrolagus* (Chondrichthyes, Holocephali). – Cybium **26**: 225–233.

Dingerkus, G. & Séret, B. (1992a): *Parioglossus neocaledonicus*, a new species of microdesmid goby from New Caledonia (Teleostei: Gobioidei: Microdesmidae). – Cybium **16**: 133–136.

Dingerkus, G. & Séret, B. (1992b): First record of *Moringua microchir* for New Caledonia and from freshwater (Teleostei: Anguilliformes: Moringuidae). – Cybium **16**: 175–176.

Dingerkus, G. & Séret, B. (1992c): *Rhyacichthys guilberti*, a new species of loach goby from northeastern New Caledonia (Teleostei: Rhyacichthyidae). – Tropical Fish Hobbyist **1992** (7): 174–176.

Dooley, J. K. (1978): Systematics and biology of the tilefishes (Perciformes: Branchiostegidae and Malacanthidae), with descriptions of two new species. – NOAA Technical Report NMFS Circular, U. S. Department of Commerce, National Oceanic and Atmospheric Administration, National Marine Fisheries Service **411**: V + 79 pp.

Duhamel, G. (1995): Révision des genres *Centriscops* et *Notopogon*, Macroramphosidae des zones subtropicale et tempérée de l'Hemisphère Sud. – Cybium **19**: 261–303.

Duhamel, G. (1997): *Notopogon xenosoma* Regan 1914 (Teleostei, Macroramphosidae) en limite de distribution aux abords de la Nouvelle-Calédonie et de Madagascar. – In: Séret, B. (ed.): Résultats des campagnes MUSORSTOM, vol. 17. – Mémoires du Muséum national d'Histoire naturelle **174**: 83–89.

Duméril, A. H. A. (1870): Histoire naturelle des poissons, ou ichthyologie générale. Tome second. Ganoïdes, Dipnés, Lophobranches, pp. 1–624 + atlas: pp. 9–12, pls. 15–26; Paris (Roret).

Duncker, G. (1915): Revision der Syngnathidae. Erster Teil. – Mitteilungen aus dem naturhistorischen (zoologischen) Museum in Hamburg **32**: 9–120, 1 pl.

Ege, V. (1953): Paralepididae I (*Paralepis* and *Lestidium*). Taxonomy, ontogeny, phylogeny and distribution. – Dana Report **40**: 1–184.

Ege, V. (1957): Paralepididae II (*Macroparalepis*). Taxonomy, ontogeny, phylogeny and distribution. – Dana Report **43**: 1–101.

Eschmeyer, W. N. & Fricke, R. (eds.) (2010): Catalog of fishes, electronic version (15 January 2010). – Internet publication, San Francisco (California Academy of Sciences). – http://research.calacademy.org/research/Ichthyology/Catalog/fishcatmain.asp.

Eschmeyer, W. N., Hirosaki, Y. & Abe, T. (1973): Two new species of the scorpionfish genus *Rhinopias*, with comments on related genera and species. – Proceedings of the California Academy of Sciences **39**: 285–310.

Evans, R. (2006): Diversité des poissons des récifs coralliens. Annexe 2. – In: McKenna, S. A., Baillon, N., Blaffart, H. & Abrusci, G. (eds.): Une évaluacion rapide de la biodiversité marine des récifs coralliens du Mont Panié, Province Nord, Nouvelle Calédonie. – RAP Bulletin per l'Évaluation biologique **42**: 35–42, 90–116.

Fourmanoir, P. (1969): Contenus stomacaux d'*Alepisaurus* (poissons) dans le sud-ouest Pacifique. – Cahiers de l'O. R. S. T. O. M., Série Océanographie **7**: 51–60.

Fourmanoir, P. (1970a): Notes ichtyologiques (I). – Cahiers de l'O. R. S. T. O. M., Série Océanographie **8**: 19–33.

Fourmanoir, P. (1970b): Notes ichtyologiques (II). – Cahiers de l'O. R. S. T. O. M., Série Océanographie **8**: 35–46.

Fourmanoir, P. (1971a): Description de quatre poissons trouvés pour la première fois dans les Tuamotu et en Nouvelle-Calédonie. – Cahiers du Pacifique **15**: 127–135.

Fourmanoir, P. (1971b): Listes des espèces de poissons contenus dans les estomacs de thons jaunes, *Thunnus albacares* (Bonnaterre) 1788 et de thons blancs, *Thunnus alalunga* (Bonnaterre) 1788. – Cahiers de l'O. R. S. T. O. M., Série Océanographie **9**: 109–118.

Fourmanoir, P. (1971c): Notes ichtyologiques (IV). – Cahiers de l'O. R. S. T. O. M., Série Océanographie **9**: 491–500.

Fourmanoir, P. (1973): Notes ichthyologiques (V). – Cahiers de l'O. R. S. T. O. M., Série Océanographie **11**: 33–39.

Fourmanoir, P. (1976): Formes post-larvaires et juvéniles de poissons cotiers pris au chalut pélagique dans le sud-ouest Pacifique. – Cahiers du Pacifique **19**: 47–88.

Fourmanoir, P. (1977): Description de deux nouvelles espèces d'Anthiinae (famille Serranidae). – Cahiers du Pacifique **20**: 267–270.

Fourmanoir, P. (1981): La faune marine du lagon. – In: Dugas, F. & Debenay, J. P.: Carte sédimentologique et carte annexe du lagon de Nouvelle-Calédonie à l'1 : 50.000, pp. 24–29; Paris (O. R. S. T. O. M., Notice explicative 91).

Fourmanoir, P. (1982a): Trois nouvelles espèces de Serranidae des Philippines et de la mer Corail *Plectranthias maculatus*, *Plectranthias barroi*, *Chelidoperca lecromi*. – Cybium **6**: 57–64.

Fourmanoir, P. (1982b): Répartition géographique de quelques poissons de la pente récifale externe des Îles indo-pacifiques. – Cybium **6**: 91–96.

Fourmanoir, P. (1988): *Acropoma lecorneti*, une nouvelle espèce de Nouvelle-Calédonie (Pisces, Perciformes, Acropomatidae). – Cybium **12**: 259–263.

Fourmanoir, P. & Laboute, P. (1976): Poissons des mers tropicales. Nouvelle Calédonie. Nouvelles Hébrides, 376 pp.; Papeete (Éditions du Pacifique).

Fourmanoir, P. & Randall, J. E. (1979): Three new species of serranid fishes of the genus *Plectranthias* from New Caledonia. – Micronesica **15**: 315–324.

Fourmanoir, P. & Rivaton, J. (1979): Poissons de la pente récifale externe de Nouvelle-Calédonie et des Nouvelles-Hébrides. – Cahiers d'Indo-Pacifique **1**: 405–443.

Fourmanoir, P. & Rivaton, J. (1980): *Plectranthias randalli* n. sp., un nouveau Serranidé (Anthiiné) du sud-ouest Pacifique. – Revue française d'Aquariologie **7**: 27–28.

Fowler, H. W. (1928): The fishes of Oceania. – Memoirs of the Bernice P. Bishop Museum **10**: III + 540 pp.

Fowler, H. W. (1931): The fishes of Oceania. Supplement I. – Memoirs of the Bernice P. Bishop Museum **11**: 313–381.

Fowler, H. W. (1953): Two new gobioid fishes from Oceania. – Transactions of the Royal Society of New Zealand **81**: 385–388.

Francis, M. P. & Randall, J. E. (1993): Further additions to the fish faunas of Lord Howe and Norfolk Islands, Southwest Pacific Ocean. – Pacific Science **47**: 118–135, pls. 1–4.

FRASER, T. H. (2006): A new species of cardinalfish (Perciformes: Apogonidae: *Apogon*) from New Caledonia, with comments and a key to related species. – Proceedings of the biological Society of Washington **119**: 137–142.

FRASER, T. H. (2008): Cardinalfishes of the genus *Nectamia* (Apogonidae, Perciformes) from the Indo-Pacific region with descriptions of four new species. – Zootaxa **1691**: 1–52.

FRASER, T. H. & ALLEN, G. R. (2010): Cardinalfish of the genus *Apogonichthyoides* Smith, 1949 (Apogonidae) with a description of a new species from the West-Pacific region. – Zootaxa **2348**: 40–56.

FRICKE, R. (1981a): The *kaianus*-group of the genus *Callionymus* (Pisces: Callionymidae), with descriptions of six new species. – Proceedings of the California Academy of Sciences **42**: 349–377.

FRICKE, R. (1981b): Revision of the genus *Synchiropus* (Teleostei: Callionymidae), 194 pp.; Braunschweig (Theses Zoologicae 1; J. Cramer).

FRICKE, R. (1982): Nominal genera and species of dragonets (Teleostei: Callionymidae, Draconettidae). – Annali del Museo civico di Storia naturale "Giacomo Doria" **84**: 53–92.

FRICKE, R. (1983): Revision of the Indo-Pacific genera and species of the dragonet family Callionymidae (Teleostei), X + 774 pp.; Braunschweig (Theses Zoologicae 3; J. Cramer).

FRICKE, R. (1992): Revision of the family Draconettidae (Teleostei), with descriptions of two new species and a new subspecies. – Journal of Natural History **26**: 165–195.

FRICKE, R. (1993): Pisces Teleostei: Callionymidae of New Caledonia with descriptions of new species. – In: CROSNIER, A. (ed.): Résultats des campagnes MUSORSTOM, vol. 11. – Mémoires du Muséum national d'Histoire naturelle **158**: 361–376.

FRICKE, R. (1994): Tripterygiid fishes of Australia, New Zealand and the Southwest Pacific Ocean (Teleostei), IX + 585 pp.; Koenigstein (Koeltz Scientific Books).

FRICKE, R. (1997): Tripterygiid fishes of the western and central Pacific, with descriptions of 15 new species, including an annotated checklist of world Tripterygiidae (Teleostei), IX + 607 pp.; Koenigstein (Koeltz Scientific Books).

FRICKE, R. (1998): A new species of *Eviota* with vertical trunk bars from the Loyalty Islands (Teleostei: Gobiidae). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **577**: 5 pp.

FRICKE, R. (1999): Fishes of the Mascarene Islands (Réunion, Mauritius, Rodriguez). An annotated checklist, with descriptions of new species, VIII + 759 pp.; Koenigstein (Koeltz Scientific Books).

FRICKE, R. (2000): Callionymidae of New Caledonia, with remarks on related species and descriptions of 10 new species from New Caledonia, Australia, New Guinea, and Hawaii (Teleostei). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **617**: 81 pp.

FRICKE, R. (2001): *Enneapterygius trisignatus*, a new species from Northern Grande Terre, with a key to New Caledonian tripterygiid fishes (Teleostei). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **630**: 9 pp.

FRICKE, R. (2002a): Annotated checklist of the dragonet families Callionymidae and Draconettidae (Teleostei: Callionymoidei), with comments on callionymid fish classification. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **645**: 103 pp.

FRICKE, R. (2002b): *Callionymus ogilbyi*, a new species of eastern Australian dragonets, with a redescription of *Callionymus scaber* McCulloch (Teleostei: Callionymidae). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **634**: 12 pp.

FRICKE, R. (2002c): Tripterygiid fishes of New Caledonia, with zoogeographical remarks. – Environmental Biology of Fishes **65**: 175–198.

FRICKE, R. (2004a): *Cocotropus richeri*, a new species of velvetfish (Teleostei: Aploactinidae) from Lifou, Loyalty Islands. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **660**: 7 pp.

FRICKE, R. (2004b): Review of the pipefishes and seahorses (Teleostei: Syngnathidae) of New Caledonia, with descriptions of five new species. – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **668**: 66 pp.

FRICKE, R. (2006): Two new species and a new record of dragonets from New Caledonia (Teleostei: Callionymidae). – Stuttgarter Beiträge zur Naturkunde, Serie A (Biologie) **696**: 14 pp.

FRICKE, R. (2008): Authorship, availability and validity of fish names described by PETER (PEHR) SIMON FORSSKÅL and JOHANN CHRISTIAN FABRICIUS in the 'Descriptiones animalium' by CARSTEN NIEBUHR in 1775 (Pisces). – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **1**: 1–76.

FRICKE, R. & ESCHMEYER, W. N. (2010): A guide to fish collections in the Catalog of fishes. Online version, updated 15 January 2010. – Internet publication, San Francisco (California Academy of Sciences). – http://research.calacademy.org/research/Ichthyology/Catalog/collections.asp.

FRICKE, R. & KULBICKI, M. (2006): Checklist of the shore fishes of New Caledonia [1st edition]. – In: PAYRI, C. E. & RICHER DE FORGES, B. (eds.): Compendium of marine species from New Caledonia. – Documents scientifiques et techniques, Institut de Recherche pour le Développement Nouméa **II 7**, pp. 313–357, pls. 15/1 and 15/2.

FRICKE, R. & KULBICKI, M. (2007): Checklist of the shore fishes of New Caledonia (2nd edition). – In: PAYRI, C. E. & RICHER DE FORGES, B. (eds.): Compendium of marine species from New Caledonia. 2nd edition. – Documents scientifiques et techniques, Institut de Recherche pour le Développement Nouméa **II 7** (2), pp. 357–401, pls. 15/1 and 15/2.

FUKUI, A. & OZAWA, T. (2004): *Uncisudis posteropelvis*, a new species of barracudina (Aulopiformes: Paralepididae) from the western North Pacific Ocean. – Ichthyological Research **51**: 289–294.

GABRIÉ, C., ALLEN, G. R., BOUILLERET, F., DOWNER, A., GARRIGUE, C., GERAUX, H., HANNECART, M., HERRENSCHMIDT, J. B., ODY, D., PETIT, M., PICHON, M., SEGUIN, F., VIRLY, S. & YOU, H. (2007): Évaluation rapide du contexte biologique, écologique et humain de la zone marine du Diahot-Balabio (Province nord de Nouvelle-Calédonie), 151 pp.; report, New Caledonia (WWF-France and Province Nord).

GIBBS, R. H., Jr., CLARKE, T. A., Jr. & GOMON, J. R. (1983): Taxonomy and distribution of the stomioid fish genus *Eustomias* (Melanostomiidae), I: subgenus *Nominostomias*. – Smithsonian Contributions to Zoology **380**: IV + 139 pp.

GILL, A. C. (1999): Pseudochromidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2557–2577; Rome (FAO).

GILL, A. C. (2004): Revision of the Indo-Pacific dottyback fish subfamily Pseudochrominae (Perciformes: Pseudochromidae). – Smithiana, Publications in aquatic Biodiversity, Bulletin **1**: 1–213, pls. 1–12.

GILL, A. C. & EDWARDS, A. J. (2002): Two new species of the Indo-Pacific fish genus *Pseudoplesiops* (Perciformes, Pseudochromidae, Pseudoplesiopinae). – Bulletin of the Natural History Museum, Zoology Series **68**: 19–26.

GILL, A. C. & JEWETT, S. L. (2004): *Eviota hoesei* and *E. readerae*, new species of fish from the southwest Pacific, with comments on the identity of *E. corneliae* Fricke (Perciformes: Gobiidae). – Records of the Australian Museum **56**: 235–240.

GILL, A. C., PYLE, R. L. & EARLE, J. L. (1996): *Pseudochromis ephippiatus*, new species of dottyback from southeastern Papua New Guinea (Teleostei: Perciformes: Pseudochromidae). – Revue française d'Aquariologie **23**: 97–100.

GILL, A. C. & WINTERBOTTOM, R. (1993): *Pseudochromis kolythrus*, a new species of dottyback from New Caledonia, with comments on its relationships (Teleostei: Perciformes: Pseudochromidae). – American Museum Novitates **3082**: 7 pp.

GOMON, M. F. (2001): Descriptions of two new species of *Bodianus* (Perciformes: Labridae) from Australasian waters. – New Zealand Journal of Zoology **28**: 407–416.

GOMON, M. F. (2006): A revision of the labrid fish genus *Bodianus* with descriptions of eight new species. – Records of the Australian Museum, Supplement **30**: 1–133.

GOMON, M. F. & SATO, T. (2004): A new cucumberfish (Paraulopidae) of the *Paraulopus nigripinnis* complex from central eastern Australia. – Records of the Australian Museum **56**: 195–199.

GON, O. (1993): Revision of the cardinalfish genus *Cheilodipterus* (Perciformes: Apogonidae), with description of five new species. – Indo-Pacific Fishes **22**: 59 pp., 5 pls.

GON, O. & RANDALL, J. E. (2003): A review of the cardinalfishes (Perciformes: Apogonidae) of the Red Sea. – Smithiana, Publications in aquatic Biodiversity, Bulletin **1**: 1–48, pls. 1–6.

GOREN, M. (1981): Three new species and three new records of gobies from New Caledonia. – Cybium **5**: 93–101.

GOREN, M. (1982): *Eviota nigriventris* Giltay, new for New Caledonia. – Cybium **6**: 34.

GOREN, M. (1988): Redescription of *Bathygobius albopunctatus* (Valenciennes, 1837) and a note on its distribution. – Cybium **12**: 37–43.

GRANDPERRIN, R., FARMAN, R., LORANCE, P., JOMESSY, T., HAMEL, P., LABOUTE, P., LABROSSE, P., RICHER DE FORGES, B., SÉRET, B. & VIRLY, S. (1997): Campagne HALIPRO 2 de chalutage exploratoires profonds dans le sud de la zone économique de Nouvelle-Calédonie (R. V. Tangaroa, 4–28 novembre 1996), 150 pp.; Nouméa (O. R. S. T. O. M., Rapport de mission).

GREENFIELD, D. W. (2001): Revision of the *Apogon erythrinus* complex (Teleostei: Apogonidae). – Copeia **2001**: 459–472.

GREENFIELD, D. W. & RANDALL, J. E. (2010): Four new gobiid fishes of the genus *Eviota* from the Western Pacific, with clarification of *Eviota guttata* and *Eviota albolineata* (Teleostei: Gobiidae). – Proceedings of the California Academy of Sciences **61**: 269–289.

GRIMAUD, J. & KULBICKI, M. (1998): Influence de la distance à l'océan sur les peuplements ichtyologiques des récifs frangeants de Nouvelle-Calédonie. – Comptes-Rendus de l'Académie des Sciences, Série 3, Sciences de la Vie **321**: 923–931.

GÜNTHER, A. [C. L. G.] (1877): ANDREW GARRETT's Fische der Südsee. Band II, Heft VI. – Journal des Museum Godeffroy **4** (13): 169–216, pls. 101–120.

GÜNTHER, A. [C. L. G.] (1881): ANDREW GARRETT's Fische der Südsee. Band II, Heft VII. – Journal des Museum Godeffroy **4** (15): 217–256, pls. 121–140.

GÜNTHER, A. [C. L. G.] (1909): ANDREW GARRETT's Fische der Südsee. Heft VIII. – Journal des Museum Godeffroy **6** (16): I–IV + 261–388, pls. 143–160.

GÜNTHER, A. [C. L. G.] (1910): ANDREW GARRETT's Fische der Südsee. Heft IX. – Journal des Museum Godeffroy **6** (17): I–VI + 389–515, pls. 161–180.

HANSEN, P. E. H. (1986): Revision of the tripterygiid fish genus *Helcogramma*, including descriptions of four new species. – Bulletin of marine Science **38**: 313–354.

HAROLD, A. S. & WINTERBOTTOM, R. (1999): *Gobiodon brochus*: a new species of gobiid fish (Teleostei: Gobioidei) from the western South Pacific, with a description of its unique jaw morphology. – Copeia **1999**: 49–57.

HARRISON, I. J. & SENOU, H. (1999): Mugilidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2069–2108; Rome (FAO).

HEEMSTRA, P. C. & RANDALL, J. E. (1999): Serranidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2442–2548, pls. 1–7; Rome (FAO).

HENSLEY, D. A. & RANDALL, J. E. (2003): A new flatfish of the Indo-Pacific genus *Asterorhombus* (Pleuronectiformes: Bothidae). – Smithiana, Special Publication **2**: 1–9.

HIDAKA, K., IWATSUKI, Y. & RANDALL, J. E. (2008): A review of the Indo-Pacific bonefishes of the *Albula argentea* complex, with a description of a new species. – Ichthyological Research **55**: 53–64.

HO, H.-C. & SHAO, K.-T. (2010): A new species of *Chaunax* (Lophiiformes: Chaunacidae) from the western South Pacific, with comments on *C. latipunctatus*. – Zootaxa **2445**: 53–61.

HOLLEMAN, W. (1993): *Ucla xenogrammus*, a new genus and species of Indo-Pacific fishes (Perciformes, Tripterygiidae). – J. L. B. Smith Institute of Ichthyology, Special Publication **55**: 1–10.

HULLEY, P. A. & DUHAMEL, G. (2009): A review of the lanternfish genus *Bolinichthys* Paxton, 1972 (Myctophidae). – Cybium **33**: 259–304.

HUTCHINS, J. B. (2001): Monacanthidae Filefishes (leatherjackets). – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO Species Identification Guide for Fishery Purposes. The living marine resources of the Western Central Pacific. Vol. 6. Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles, sea turtles, sea snakes and marine mammals, pp. 3629–3647; Rome (FAO).

IMAMURA, H. (2007): *Rogadius mcgroutheri*, a new species of flathead (Teleostei: Platycephalidae) collected from eastern Australia and New Caledonia. – Ichthyological Research **54**: 303–307.

IMAMURA, H. & KNAPP, L. W. (2009): A new species of the flathead genus *Onigocia* (Teleostei: Platycephalidae) collected from the Coral and Tasman Seas. – Zootaxa **2008**: 23–28.

IVANTSOFF, W. & CROWLEY, L. E. L. M. (1999): Atherinidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2113–2139; Rome (FAO).

IWAMOTO, T. & GRAHAM, K. J. (2001): Grenadiers (families Bathygadidae and Macrouridae, Gadiformes, Pisces) of New South Wales, Australia. – Proceedings of the California Academy of Sciences **52**: 407–509.

IWAMOTO, T., MCMILLAN, P. & SHCHERBACHEV, YU. N. (1999): A new grenadier, genus *Caelorinchus*, from Australia and New Zealand (Pisces, Gadiformes, Macrouridae). – New Zealand Journal of marine and Freshwater Research **33**: 49–54.

IWAMOTO, T. & MERRETT, N. R. (1997): Pisces Gadiformes: Taxonomy of grenadiers of the New Caledonian region, southwest Pacific. – In: CROSNIER, A. (ed.): Résultats des campagnes MUSORSTOM, vol. 18. – Mémoires du Muséum national d'Histoire naturelle **176**: 473–570.

IWAMOTO, T. & SAZONOV, YU. I. (1994): Revision of the genus *Kumba* (Pisces, Gadiformes, Macrouridae), with the description of three new species. – Proceedings of the California Academy of Sciences **48**: 221–237.

IWATSUKI, Y., KIMURA, S. & YOSHINO, T. (2001): Redescription of *Gerres longirostris* (Lacepède, 1801) and *Gerres oblongus* Cuvier in Cuvier & Valenciennes, 1830, included in the *Gerres longirostris* complex (Perciformes: Gerreidae). – Copeia **2001**: 954–965.

IWATSUKI, Y., KIMURA, S. & YOSHINO, T. (2006): A new sparid, *Acanthopagrus akazakii*, from New Caledonia with notes on nominal species of *Acanthopagrus*. – Ichthyological Research **53**: 406–414.

JOHNSON, J. W. (1999): Annotated checklist of the fishes of Moreton Bay, Queensland, Australia. – Memoirs of the Queensland Museum **43**: 709–762.

JOHNSON, R. K. (1974): A revision of the alepisauroid family Scopelarchidae (Pisces: Myctophiformes). – Fieldiana Zoology **66**: IX +249 pp.

JOHNSON, R. K. (1982): Fishes of the families Evermannellidae and Scopelarchidae: systematics, morphology, interrelationships, and zoogeography. – Fieldiana Zoology, New Series **12**: XIII + 252 pp.

JORDAN, D. S. & DICKERSON, M. C. (1908): On a collection of fishes from Fiji, with notes on certain Hawaiian fishes. – Proceedings of the United States national Museum **34**: 603–617.

JOUAN, H. (1861): Notes sur quelques espèces de poissons de la Nouvelle-Calédonie. – Mémoires de la Société Impériale des Sciences naturelles de Cherbourg **8**: 241–308.

JOUAN, H. (1863): Supplément a la description des poissons de la Nouvelle-Calédonie. – Mémoires de la Société Impériale des Sciences naturelles de Cherbourg **9**: 177–187.

JOUAN, H. (1879): Quelques mots sur la faune ichthyologique de la cote nord-est d'Australie et du détroit de Torres, comparée a celle de la Nouvelle-Calédonie. – Mémoires de la Société Impériale des Sciences naturelles de Cherbourg **21**: 328–335.

KÄHSBAUER, P. (1976): Über einige Syngnathiden des Indo-Pazifischen Raumes und der Antillen. – Annalen des naturhistorischen Museums in Wien **80**: 281–290.

KARMOVSKAYA, E. S. (2003): New records of synaphobranchid eels (Synaphobranchidae, Anguilliformes) collected off New Caledonia and adjacent regions, with description of a new species of *Atractodenchelys*. – Voprosy ikhtiologii **43**: 437–446 [in Russian].

KARMOVSKAYA, E. S. (2004): Benthopelagic bathyal conger eels of families Congridae and Nettastomatidae from the western tropical Pacific, with descriptions of ten new species. – Journal of Ichthyology **44** (Supplement 1): S1–S32.

KARMOVSKAYA, E. S. (2009): New records of congrid eels of the genus *Bathycongrus* (Congridae) in the west-central tropical Pacific Ocean, with a description of three new species. – Journal of Ichthyology **49**: 139–153 [also appeared in Russian in: Voprosy ikhtiologii **49**: 168–182].

KARMOVSKAYA, E. S. & SMITH, D. G. (2008): *Bathycongrus trimaculatus*, a new congrid eel (Teleostei: Anguilliformes) from the southwestern Pacific, with a redescription of *Bathycongrus bleekeri* Fowler. – Zootaxa **1643**: 26–36.

KARRER, C. (1982): Anguilliformes du Canal de Mozambique (Pisces, Teleostei). – Faune Tropicale **23**: 1–116.

KAWAI, T. & AMAOKA, K. (2006): A new righteye flounder, *Poecilopsetta pectoralis* (Pleuronectiformes: Poecilopsettidae), from New Caledonia. – Ichthyological Research **53**: 264–268.

KAWAI, T., AMAOKA, K. & SÉRET, B. (2008): *Samariscus multiradiatus*, a new dextral flounder (Pleuronectiformes: Samaridae) from New Caledonia. – Ichthyological Research **55**: 17–21.

KAWAI, T., AMAOKA, K. & SÉRET, B. (2010): A new righteye flounder, *Poesilopsetta multiradiata* (Teleostei: Pleuronectiformes: Poecilopsettidae), from New Zealand and New Caledonia (South-West Pacific). – Ichthyological Research **57**: 193–198.

KAWAI, T., NAKAYA, K. & SÉRET, B. (2008): A new armoured searobin *Paraheminodus longirostralis* (Teleostei: Peristediidae) from New Caledonia. – Ichthyological Research **55**: 374–378.

KEITH, P., LORD, C. & TAILLEBOIS, L. (2010): *Sicyopus (Smilosicyopus) pentecost*, a new species of freshwater goby from Vanuatu and New Caledonia (Gobioidei: Sicydiinae). – Cybium **34**: 303–310.

KEITH, P., MARQUET, G. & POUILLY, M. (2009): *Stiphodon mele* n. sp., a new species of freshwater goby from Vanuatu and New Caledonia (Teleostei, Sicydiinae), and comments about amphidromy and regional dispersion. – Zoosystema **31**: 471–483.

KEITH, P., WATSON, R. E. & MARQUET, G. (2002): *Stenogobius (Insularigobius) yateiensis*, a new species of freshwater goby from new Caledonia (Teleostei: Gobioidei). – Bulletin français de la Pêche et de la Pisciculture **364**: 187–196.

KENALEY, C. P. (2007): Revision of the stoplight loosejaw genus *Malacosteus* (Teleostei: Stomiidae: Malacosteinae), with description of a new species from the temperate Southern Hemisphere and Indian Ocean. – Copeia **2007**: 886–900.

KNAPP, L. W. (1999): Platycephalidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2385–2421; Rome (FAO).

KNAPP, L. W., IMAMURA, H. & SAKASHITA, M. (2000): *Onigocia bimaculata*, a new species of flathead fish (Scorpaeniformes: Platycephalidae) from the Indo-Pacific. – J. L. B. Smith Institute of Ichthyology, Special Publication **64**: 1–10.

KOTLYAR, A. N. (1984): A new genus and species of fishes (Beryciformes, Trachichthyidae) from the Pacific. – Zoologicheskii Zhurnal **63**: 1591–1594 [in Russian, English summary].

KOTLYAR, A. N. (1996): Beryciform fishes of the world ocean, 368 pp.; Moscow (VNIRO Publishing).

KUITER, R. H. (2000): Seahorses, pipefishes and their relatives. A comprehensive guide to Syngnathiformes, 240 pp.; Chordleywood (TMC Publishing).

KUITER, R. H. (2002): Lippfische Labridae, 208 pp.; Stuttgart (E. Ulmer).

KULBICKI, M. (1988a): Patterns in the trophic structure of fish populations across the SW lagoon of New Caledonia. – Proceedings of the 6th international Coral Reef Symposium, Townsville, Australia, 8th–12th August 1988, **2**: 89–94.

KULBICKI, M. (1988b): Correlation between catch from bottom longlines and fish censures in the SW lagoon of New Caledonia. – Proceedings of the 6th international Coral Reef Symposium, Townsville, Australia, 8th–12th August 1988, **2**: 305–312.

KULBICKI, M. & MOU-THAM, G. (1987): Essais de pêche au casier à poissons dans le lagon de Nouvelle Calédonie. – Rapports scientifiques et techniques, Sciences de la Mer, Biologie marine, IFREMER/ORSTOM **47**: 1–22.

KULBICKI, M., MOU-THAM, G., THOLLOT, P. & WANTIEZ, L. (1993): Length-weight relationships of fish from the lagoon of New Caledonia. – Naga, ICLARM Quarterly **16**: 26–30.

KULBICKI, M., RANDALL, J. E. & RIVATON, J. (1994): Checklist of the fishes of the Chesterfield Islands (Coral Sea). – Micronesica **27**: 1–43.

KULBICKI, M. & WANTIEZ, L. (1990): Variations in the fish catch composition in the Bay of St Vincent, New Caledonia, as determined by experimental trawling. – Australian Journal of marine and Freshwater Research **41**: 121–144.

KULBICKI, M. & WILLIAMS, J. T. (1997): Checklist of the shorefishes of Ouvéa Atoll, New Caledonia. – Atoll Research Bulletin **444**: 1–26.

LABOUTE, P. & GRANDPERRIN, R. (2000): Poissons de Nouvelle-Calédonie, 520 pp.; Nouméa (Editions Catherine Ledru).

LARSON, H. K. (1985): A revision of the gobiid genus *Bryaninops* (Pisces), with a description of six new species. –The Beagle, occasional Papers of the Northern Territory Museum of Arts and Sciences **2**: 57–93.

LARSON, H. K. (1990): A revision of the commensal gobiid fish genera *Pleurosicya* and *Luposicya* (Gobiidae), with descriptions of eight new species of *Pleurosicya* and discussion of related genera. – The Beagle, occasional Papers of the Northern Territory Museum of Arts and Sciences **7**: 1–53.

LARSON, H. K. (2001): A revision of the gobiid fish genus *Mugilogobius* (Teleostei: Gobioidei), and its systematic placement. – Records of the Western Australian Museum, Supplement **62**: VI + 233 pp.

LAST, P. R., BURGESS, G. H. & SÉRET, B. (2002): Description of six new species of lantern-sharks of the genus *Etmopterus* (Squaloidea: Etmopteridae) from the Australasian region. – Cybium **26**: 203–223.

LAST, P. R. & MOTEKI, M. (2001): Bramidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 5. Bony fishes part 3 (Menidae to Pomacentridae), pp. 2824–2836; Rome (FAO).

LAST, P. R. & STEVENS, J. D. (1994): Sharks and rays of Australia, 513 pp., 1084 pls.; Deakin West, ACT (Fisheries Research & Development Corporation).

LEIS, J. M. (2001): Diodontidae Porcupinefishes (burrfishes). – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO Species Identification Guide for Fishery Purposes. The living marine resources of the Western Central Pacific. Vol. 6. Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles, sea turtles, sea snakes and marine mammals, pp. 3658–3665; Rome (FAO).

LETOURNEUR, Y., KULBICKI, M. & LABROSSE, P. (1998): Length-weight relationships of fishes from coral reefs and lagoons of New Caledonia – an update. – Naga, ICLARM Quarterly **1998**: 39–46.

LOUBENS, G. (1978): Biologie de quelques espèces de poisson du lagon néo-calédonien. I. Détermination de l'age (otolithométrie). – Cahiers de l'O. R. S. T. O. M., Série Océanographie **16**: 263–283.

LOURIE, S. A., VINCENT, A. C. & HALL, H. J. (1999): Seahorses. An identification guide to the world's species and their conservation, X + 214 pp.; London (Project Seahorse).

LUBBOCK, R. & POLUNIN, N. V. C. (1977): Notes on the Indo-West Pacific genus *Ctenogobiops* (Teleostei: Gobiidae), with descriptions of three new species. – Revue suisse de Zoologie **84**: 505–514, pls. 1–3.

MARQUET, G., KEITH, P. & VIGNEUX, E. (2003): Atlas des poissons et des crustaceés d'eau douce de Nouvelle-Calédonie, 4 unnumbered pp. + 1–282 + 3 unnumbered pp.; Paris (Muséum National d'Histoire Naturelle).

MARQUET, G., SÉRET, B. & LECOMTE-FINIGER, R. (1997): Inventaires comparés des poissons des eaux intérieures de trois îles océaniques tropicales de l'Indo-Pacifique (La Réunion, La Nouvelle-Calédonie et Tahiti). – Cybium **21**, Supplément: 27–34.

MARSHALL, A. D., COMPAGNO, L. J. V. & BENNETT, M. B. (2009): Redescription of the genus *Manta* with resurrection of *Manta alfredi* (Krefft, 1868) (Chondrichthyes; Myliobatoidei; Mobulidae). – Zootaxa **2301**: 1–28.

MATSUURA, K. & FOURMANOIR, P. (1984): A new triacanthodid fish, *Triacanthodes intermedius*, from New Caledonia. – Bulletin of the national Science Museum (A) **10**: 31–35.

MATSUURA, K. & TYLER, J. C. (1997): Tetraodontiform fishes, mostly from deep waters, of New Caledonia. – In: SÉRET, B. (ed.): Résultats des campagnes MUSORSTOM, vol. 17. – Mémoires du Muséum national d'Histoire naturelle **174**: 173–208.

MCCOSKER, J. E. (1999): Pisces Anguilliformes: deepwater snake eels (Ophichthidae) from the New Caledonia region, Southwest Pacific Ocean. – In: CROSNIER, A. (ed.): Résultats des campagnes MUSORSTOM, vol. 20. – Mémoires du Muséum national d'Histoire naturelle **180**: 571–588.

MCCOSKER, J. E. (2010): Deepwater Indo-Pacific species of the snake-eel genus *Ophichthus* (Anguilliformes: Ophichthidae), with the description of nine new species. – Zootaxa **2505**: 1–39.

MCCOSKER, J. E. & SMITH, D. G. (1997): Two new Indo-Pacific morays of the genus *Uropterygius* (Anguilliformes: Muraenidae). – Bulletin of marine Science **60**: 1005–1014.

MCCOSKER, J. E. & STEWART, A. L. (2006): Additions to the New Zealand marine eel fauna with the description of a new moray, *Anarchias supremus* (Teleostei: Muraenidae), and comments on the identity of *Gymnothorax griffini* Whitley & Phillips. – Journal of the Royal Society of New Zealand **36**: 83–95.

MCCULLOCH, A. R. & WHITLEY, G. P. (1925): A list of the fishes recorded from Queensland waters. – Memoirs of the Queensland Museum **8**: 125–182.

MEAD, G. W. (1972): Bramidae. – Dana Report **81**: 1–166, pls. 1–9.

MELÉNDEZ C., R. & MARKLE, D. F. (1997): Phylogeny and zoogeography of *Laemonema* and *Guttigadus* (Pisces; Gadiformes; Moridae). – Bulletin of marine Science **61**: 593–670.

MELO, M. R. S. (2009): Revision of the genus *Chiasmodon* (Acanthomorpha: Chiasmodontidae), with the description of two new species. – Copeia **2009**: 583–608.

MERRETT, N. R. & IWAMOTO, T. (2000): Pisces Gadiformes: Grenadier fishes of the New Caledonian region, southwest Pacific Ocean. Taxonomy and distribution, with ecological notes. – In: CROSNIER, R. (ed.): Résultats des campagnes MUSORSTOM, vol. 21. – Mémoires du Muséum national d'Histoire naturelle **184**: 723–781.

MIHARA, E. & AMAOKA, K. (2004): Pleuronectiform fishes from New Caledonian waters. Five species of the samarid genera *Plagiopsetta* and *Samaris* (Samaridae). – In: MARSHALL, B. & RICHER DE FORGES, B. (eds.): Tropical deep-sea benthos, vol. 23. – Mémoires du Muséum national d'Histoire naturelle **191**: 611–635.

MOHLMANN, M. S. & RANDALL, J. E. (2002): Three new species of gobiid fishes of the genus *Amblyeleotris* from the central and western Pacific. – Raffles Bulletin of Zoology **50**: 215–226.

MØLLER, P. R. & SCHWARZHANS, W. (2008): Review of the Dinematichthyini (Teleostei: Bythitidae) of the Indo-Pacific. Part IV. *Dinematichthys* and two new genera with descriptions of nine new species. – The Beagle, Records of the Museums and Art Galleries of the Northern Territory **24**: 87–146.

MOOI, R. D. (1995): Revision, phylogeny, and discussion of biology and biogeography of the fish genus *Plesiops* (Perciformes: Plesiopidae). – Life Sciences Contributions, Royal Ontario Museum **159**: IV + 108 pp.

MOTOMURA, H. (2002): First record of a scorpionfish (Scorpaenidae), *Scorpaenopsis ramaraoi*, from New Caledonia. – Cybium **26**: 237–238.

MOTOMURA, H. (2004): Revision of the scorpionfish genus *Neosebastes* (Scorpaeniformes: Neosebastidae), with descriptions of five new species. – Indo-Pacific Fishes **37**: 76 pp., 2 pls.

MOTOMURA, H., PAULIN, C. D. & STEWART, A. L. (2005): First records of *Scorpaena onaria* (Scorpaeniformes: Scorpaenidae) from the southwestern Pacific Ocean, and comparisons with the northern hemisphere population. – New Zealand Journal of marine and Freshwater Research **39**: 865–880.

MYERS, R. F. (1999): Micronesian reef fishes. A comprehensive guide to the coral reef fishes of Micronesia. 3rd revised and expanded edition, VI + 330 pp., 192 pls.; Barrigada, Guam (Coral Graphics).

NAFPAKTITIS, B. G., ROBERTSON, D. A. & PAXTON, J. R. (1995): Four new species of the lanternfish genus *Diaphus* (Myctophidae) from the Indo-Pacific. – New Zealand Journal of marine and Freshwater Research **29**: 335–344.

NAKAYA, K. & SÉRET, B. (1999): A new species of deepwater catshark, *Apristurus albisoma* n. sp. from New Caledonia (Chondrichthyes: Carcharhiniformes: Scyliorhinidae). – Cybium **23**: 297–310.

NELSON, J. S. (2006): Fishes of the world. 4th edition, XIX + 601 pp.; Hoboken, New Jersey (Wiley).

NIELSEN, J. G. (1997): Deepwater ophidiiform fishes from off New Caledonia with six new species. – In: SÉRET, B. (ed.): Résultats des campagnes MUSORSTOM, vol. 17. – Mémoires du Muséum national d'Histoire naturelle **174**: 51–82.

NIELSEN, J. G., COHEN, D. M., MARKLE, D. F. & ROBINS, C. R. (1999): FAO species catalogue. Vol. 18. Ophidiiform fishes of the world (order Ophidiiformes), XI + 178 pp.; Rome (FAO).

NIELSEN, J. G. & MERRETT, N. R. (2000): Revision of the cosmopolitan deep-sea genus *Bassozetus* (Pisces: Ophidiidae) with two new species. – Galathea Report **18**: 7–56, pl. 1.

NYAKO, C. O. & AMAOKA, K. (1996): First records of the zeiform fish, *Macrurocyttus acanthopodus* Fowler, 1933, from the Coral Sea. – Ichthyological Research **43**: 93–96.

OGILBY, J. D. (1898): A contribution to the zoology of New Caledonia. – Proceedings of the Linnean Society of New South Wales **22** (1897): 762–770.

PALMER, G. (1970): New records, and one new species, of teleost fishes from the Gilbert Islands. – Bulletin of the British Museum (Natural History), Zoology Series **19**: 213–234.

PARENTI, P. & RANDALL, J. E. (2000): An annotated checklist of the species of the labroid fish families Labridae and Scaridae. – Ichthyological Bulletin, J. L. B. Smith Institute of Ichthyology **68**: 1–97.

PARIN, N. V. (1967): Review of the marine belonids of the western Pacific and Indian oceans. – Trudy Instituta okeanologii **84**: 3–83.

PARIN, N. V. (1989): A review of the genus *Rexea* (Gempylidae) with description of three new species. – Voprosy ikhtiologii **29**: 3–23 [in Russian].

PARIN, N. V. (1999): Exocoetidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2162–2179; Rome (FAO).

PARIN, N. V. & PAXTON, J. R. (1990): Australia's east coast gemfish. – Australian Fisheries **49**: 115–119.

PAULIN, C. D. (1987): New Australian fishes. Part 17. New species of *Gadella* and *Physiculus* (Moridae). – Memoirs of the Museum of Victoria **48**: 75–77.

PAULIN, C. D. & MORELAND, J. M. (1979): Halosauridae of the south-west Pacific (Pisces: Teleostei: Notacanthiformes). – New Zealand Journal of Zoology **6**: 267–271.

PAULIN, C. D. & ROBERTS, C. D. (1997): Review of the morid cods (Teleostei, Paracanthopterygii, Moridae) of New Caledonia, southwest Pacific Ocean, with description of a new species of *Gadella*. – In: SÉRET, B. (ed.): Résultats des campagnes MUSORSTOM, vol. 17. – Mémoires du Muséum national d'Histoire naturelle **174**: 17–41.

PAXTON, J. R. (1989): Synopsis of the whalefishes (family Cetomimidae) with descriptions of four new genera. – Records of the Australian Museum **41**: 135–206.

PAXTON, J. R. (1999): Berycidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2218–2224; Rome (FAO).

PAXTON, J. R. & HULLEY, P. A. (1999): Myctophidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the western Central Pacific. Vol. 3. Batoid fishes, chimaeras and bony fishes part 1 (Elopidae to Linophrynidae), pp. 1957–1965; Rome (FAO).

PIETSCH, T. W. & GROBECKER, D. B. (1987): Frogfishes of the world. Systematics, zoogeography, and behavioral ecology, XXII + 420 pp., pls. 1–56; Stanford (Stanford University Press).

PLESSIS, Y. & FOURMANOIR, P. (1966a): *Pleurosicya taisnei*, nouvelle espèce de Gobiidae de Nouvelle-Calédonie. – Bulletin du Muséum national d'Histoire naturelle (2) **37**, (1965): 764–765.

PLESSIS, Y. & FOURMANOIR, P. (1966b): Une nouvelle espèce de poisson des récifs coralliens de Nouvelle-Calédonie: *Pseudochromis salvati* n. sp. – Bulletin du Muséum national d'Histoire naturelle (2) **38**: 227–229.

PLESSIS, Y. & FOURMANOIR, P. (1966c): Mission d'étude des récifs de Nouvelle-Calédonie. Liste des poissons récoltés par Yves Plessis en 1961. – Cahiers du Pacifique **9**: 123–147.

POSS, S. G. (1999): Scorpaenidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2291–2352; Rome (FAO).

POSTEL, E. (1965a): *Epinephelus cylindricus*, serranidé nouveau des environs de Nouméa (Nouvelle Calédonie). – Bulletin du Muséum national d'Histoire naturelle (2) **37**: 124–127.

POSTEL, E. (1965b): Deux lutjanidés nouveaux des environs de Nouméa (Nouvelle-Calédonie). – Bulletin du Muséum national d'Histoire naturelle (2) **37**: 244–251.

PROKOFIEV, A. M. & KUKUEV, E. I. (2009): Systematics and distribution of black swallowers of the genus *Chiasmodon*

(Perciformes: Chiasmodontidae). – Journal of Ichthyology **49**: 899–939.

Pyle, R. L. (2001a): Chaetodontidae. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 5. Bony fishes part 3 (Menidae to Pomacentridae), pp. 3224–3265; Rome (FAO).

Pyle, R. L. (2001b): Pomacanthidae. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 5. Bony fishes part 3 (Menidae to Pomacentridae), pp. 3266–3286; Rome (FAO).

Quenouille, B., Bermingham, E. & Planes, S. (2004): Molecular systematics of the damselfishes (Teleostei: Pomacentridae): Bayesian phylogenetic analyses of mitochondrial and nuclear DNA sequences. – Molecular Phylogenetics and Evolution **31**: 66–88.

Quéro, J.-C. (2001): Colocongridae (Pisces: Anguilliformes) de Nouvelle-Calédonie (Pacifique sud-ouest). Description de *Coloconger saldanhai* sp. n. – Boletim do Museu Municipal do Funchal (História natural), Suplemento **6**: 53–64.

Raj, U. & Seeto, J. (1983): A new species of *Paracaesio* (Pisces: Lutjanidae) from the Fiji Islands. – Copeia **1983**: 450–453.

Randall, J. E. (1972): A revision of the labrid fish genus *Anampses*. – Micronesica **8**: 151–190.

Randall, J. E. (1979): A review of the serranid fish genus *Anthias* of the Hawaiian Islands, with descriptions of two new species. – Contributions in Science, Natural History Museum of Los Angeles County **302**: 1–13.

Randall, J. E. (1980): Revision of the fish genus *Plectranthias* (Serranidae: Anthiinae) with descriptions of 13 new species. – Micronesica **16**: 101–187.

Randall, J. E. (1981): Revision of the labrid fish genus *Labropsis* with descriptions of five new species. – Micronesica **17**: 125–155.

Randall, J. E. (1982): Examples of antitropical and antiequatorial distribution of Indo-West Pacific fishes. – Pacific Science **35** (1981): 197–209.

Randall, J. E. (1987): A preliminary synopsis of the groupers (Perciformes: Serranidae: Epinephelinae) of the Indo-Pacific region. – In: Polovina, J. J. & Ralston, S. (eds.): Tropical snappers and groupers. Biology and fishery management, pp. 89–188; Boulder, London (Westview Press).

Randall, J. E. (1998): Review of the cardinalfishes (Apogonidae) of the Hawaiian Islands, with descriptions of two new species. – Aqua, Journal of Ichthyology and aquatic Biology **3**: 25–38.

Randall, J. E. (1999): Revision of the Indo-Pacific labrid fishes of the genus *Pseudocheilinus*, with descriptions of three new species. – Indo-Pacific Fishes **28**: 1–34, pls. 1–2.

Randall, J. E. (2000): Revision of the Indo-Pacific labrid fishes of the genus *Stethojulis*, with descriptions of two new species. – Indo-Pacific Fishes **31**: 42 pp., 6 pls.

Randall, J. E. (2001): Five new Indo-Pacific gobiid fishes of the genus *Coryphopterus*. – Zoological Studies **40**: 206–225.

Randall, J. E. (2002): Surgeonfishes of the world, X + 123 pp.; Honolulu (Mutual Publishing and Bishop Museum Press).

Randall, J. E. (2003): Review of the sandperches of the *Parapercis cylindrica* complex (Perciformes: Pinguipedidae), with descriptions of two new species from the Western Pacific. – Bishop Museum occasional Papers **72**: 1–19.

Randall, J. E. (2004): Five new shrimp gobies of the genus *Amblyeleotris* from islands of Oceania. – Aqua, Journal of Ichthyology and aquatic Biology **8**: 61–78.

Randall, J. E. (2005a): Reef and shore fishes of the South Pacific. New Caledonia to Tahiti and the Pitcairn Islands, XII + 707 pp.; Honolulu (University of Hawai'i Press).

Randall, J. E. (2005b): A review of the soles of the genus *Aseraggodes* from the South Pacific, with descriptions of seven new species and a diagnosis of *Synclidopus*. – Memoirs of the Museum of Victoria **62**: 191–212.

Randall, J. E. (2008): Six new sandperches of the genus *Parapercis* from the western Pacific, with description of a neotype for *P. maculata* (Bloch & Schneider). – Raffles Bulletin of Zoology, Supplement **19**: 159–178.

Randall, J. E., Allen, G. R. & Steene, R. (1997): Fishes of the Great Barrier Reef and Coral Sea. Revised and expanded edition, XX + 557 pp.; Bathurst (Crawford House).

Randall, J. E. & Baldwin, C. C. (1997): Revision of the serranid fishes of the subtribe Pseudogrammina, with descriptions of five new species. – Indo-Pacific Fishes **26**: 56 pp., 1 pl.

Randall, J. E. & Clements, K. D. (2001): Second revision of the surgeonfish genus *Ctenochaetus* (Perciformes: Acanthuridae), with descriptions of two new species. – Indo-Pacific Fishes **32**: 33 pp., 6 pls.

Randall, J. E. & Eschmeyer, W. N. (2001): Revision of the Indo-Pacific scorpionfish genus *Scorpaenopsis*, with descriptions of eight new species. – Indo-Pacific Fishes **34**: 79 pp., 12 pls.

Randall, J. E. & Fourmanoir, P. (1998): *Terelabrus rubrovittatus*, a new genus and species of labrid fish from New Caledonia and New Guinea. – Bulletin of marine Science **62**: 247–252.

Randall, J. E. & Greenfield, D. W. (1999): Holocentridae. – In: Carpenter, K. E. & Niem, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2225–2256; Rome (FAO).

Randall, J. E. & Greenfield, D. W. (2004): Two new scorpionfishes (Scorpaenidae) from the South Pacific. – Proceedings of the California Academy of Sciences **55**: 384–394.

Randall, J. E. & Guézé, P. (1981): The holocentrid fishes of the genus *Myripristis* of the Red Sea, with clarification of the *murdjan* and *hexagonus* complexes. – Contributions in Science, Natural History Museum of Los Angeles County **334**: 1–16.

Randall, J. E. & Justine, J.-L. (2008): The triggerfish *Abalistes filamentosus* from New Caledonia, a first record for the South Pacific. – Cybium **32**: 183–184.

Randall, J. E. & Kulbicki, M. (1998): Two new cardinalfishes (Perciformes: Apogonidae) of the *Apogon cyanosoma* complex from the western Pacific, with notes on the status of *A. wassinki* Bleeker. – Revue française d'Aquariologie **25**: 31–39.

Randall, J. E. & Kulbicki, M. (2005): *Siganus woodlandi*, a new species of rabbitfish (Siganidae) from New Caledonia. – Cybium **29**: 185–189.

Randall, J. E. & Kulbicki, M. (2006): A review of the goatfishes of the genus *Upeneus* (Peciformes: Mullidae) from New Caledonia and the Chesterfield Bank, with a new species and four new records. – Zoological Studies **45**: 298–307.

Randall, J. E. & Kunzmann, A. (1998): Seven new records of fishes from Indonesia, with discussion of Western Indian Ocean fishes in southwestern Indonesia. – Raffles Bulletin of Zoology **46**: 477–485.

Randall, J. E. & Lubbock, R. (1982): Three new labrid fishes of the new genus *Cirrhilabrus* from the southwestern Pacific. – Occasional Papers of the Bernice P. Bishop Museum **25**: 1–25.

RANDALL, J. E. & MCCOSKER, J. E. (1992): Revision of the fish genus *Luzonichthys* (Perciformes: Serranidae: Anthiinae), with descriptions of two new species. – Indo-Pacific Fishes **21**: 21 pp.

RANDALL, J. E., MATSUURA, K. & ZAMA, A. (1978): A revision of the triggerfish genus *Xanthichthys*, with description of a new species. – Bulletin of marine Science **28**: 688–706.

RANDALL, J. E. & MYERS, R. F. (2002): *Parupeneus insularis*, a new central Pacific species of goatfish (Perciformes: Mullidae) of the *P. trifasciatus* complex. – Zoological Studies **41**: 431–440.

RANDALL, J. E. & NAGAREDA, B. H. (2002): *Cirrhilabrus bathyphilus*, a new deep-dwelling labrid fish from the Coral Sea. – Cybium **26**: 123–127.

RANDALL, J. E. & PYLE, R. L. (2001): Four new serranid fishes of the anthiine genus *Pseudanthias* from the South Pacific. – Raffles Bulletin of Zoology **49**: 19–34.

RANDALL, J. E. & SENOU, H. (2001): Review of the Indo-Pacific gobiid fish genus *Lubricogobius*, with description of a new species and a new genus for *L. pumilus*. – Ichthyological Research **48**: 3–12.

RANDALL, J. E., SHAO, K.-T. & SHEN, J.-P. (2003): A review of the Indo-Pacific gobiid fish genus *Ctenogobiops*, with descriptions of two new species. – Zoological Studies **42**: 506–515.

RANDALL, J. E., WESTNEAT, M. W. & GOMON, M. F. (2003): Two new labrid fishes of the genus *Oxycheilinus* from the South Pacific. – Proceedings of the California Academy of Sciences **54**: 361–370, pl. 1.

RANDALL, J. E., WILLIAMS, J. T. & ROCHA, L. A. (2008): The Indo-Pacific tetraodontid fish *Canthigaster coronata*, a complex of three species. – Smithiana, Publications in aquatic Biodiversity, Bulletin **9**: 3–13.

REECE, J. S., SMITH, D. G. & HOLM, E. (2010): The moray eels of the *Anarchias cantonensis* group (Anguilliformes: Muraenidae), with description of two new species. – Copeia **2010**: 421–430.

REGAN, C. T. & TREWAVAS, E. (1932): Deep-sea angler-fishes (Ceratioidea). – Report of the Carlsberg Oceanic Expedition 1928–30, Dana Report **2**: 1–113, pls. 1–10.

RICHARDS, W. J. (1999): Triglidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2359–2382; Rome (FAO).

RICHER DE FORGES, M. & LABOUTE, P. (2009): Les zones littorales des îles Loyauté (Maré, Tiga, Lifou): état initial des milieux coralliens. Province des Îles. – Rapport de Convention **163**/09: 1–205, pls. 1–29, annexes 1–29.

RICHER DE FORGES, M. & RICHER DE FORGES, B (2010): Description du milieu benthique des îles Loyauté: Les atolls d'Ouvéa et de Beautemps-Beaupré. Province des Îles. – Rapport de Convention **339**/09: 1–68, pls. 1–24, annexes 1–30.

RIVATON, J. (1989): Premières observations sur la faune ichtyologique des îles Chesterfield (Mer du Corail). – Cybium **13**: 139–164.

RIVATON, J. & BOURRET, P. (1999): Les otolithes des poissons de l'Indo-Pacifique. – Documents scientifiques et techniques, Institut de Recherche pour le Développement, Centre de Nouméa, **II 2**, Volume spécial, 378 pp.

RIVATON, J., FOURMANOIR, P., BOURRET, P. & KULBICKI, M. (1990): Catalogue des poissons de Nouvelle-Calédonie. Checklist of fishes from New Caledonia. Rapport provisoire. – Catalogues, Sciences de la Mer, Biologie marine, O. R. S. T. O. M., Centre de Nouméa, III + 170 pp.

RIVATON, J. & RICHER DE FORGES, B. (1990): Poissons récoltés par dragage dans le lagon de Nouvelle Calédonie. – Rapports scientifiques et techniques, Sciences de la Mer, IFREMER/ ORSTOM **55**: 1–101.

ROBERTS, C. D. & PAULIN, C. D. (1997): First record of the Eucla cod, *Euclichthys polynemus* McCulloch, (Teleostei: Paracanthopterygii, Euclichthyidae) from New Caledonia, southwest Pacific Ocean, with notes on morphological characters. – In: SÉRET, B. (ed.): Résultats des campagnes MUSORSTOM, vol. 17. – Mémoires du Muséum national d'Histoire naturelle **174**: 43–50.

ROBERTS, C. D. & STEWART, A. L. (1997): Gemfishes (Scombroidei, Gempylidae, *Rexea*) of New Caledonia, southwest Pacific Oean, with description of a new species. – In: SÉRET, B. (ed.): Résultats des campagnes MUSORSTOM, vol. 17. – Mémoires du Muséum national d'Histoire naturelle **174**: 125–141.

ROSSIER, O. & KULBICKI, M. (2000): A comparison of fish assemblages from two types of algal beds and coral reefs in the south-west lagoon of New Caledonia. – Cybium **24**: 3–26.

RUSSELL, B. C. (1999): Synodontidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the western Central Pacific. Vol. 3. Batoid fishes, chimaeras and bony fishes part 1 (Elopidae to Linophrynidae), pp. 1928–1945; Rome (FAO).

RUSSELL, B. C. (2001): A new species of *Pentapodus* (Teleostei: Nemipteridae) from the western Pacific. – The Beagle, Records of the Museums and Art Galleries of the Northern Territory **17**: 53–56.

SAUVAGE, H. E. (1874): Notices ichthyologiques. – Revue et Magasin de Zoologie pure et appliquée (3) **2**: 332–340.

SAUVAGE, H. E. (1878): Description de poissons nouveaux ou imparfaitement connus de la collection du Muséum d'histoire naturelle. Famille des Scorpénidées, des Platycéphalidées et des Triglidées. – Nouvelles Archives du Muséum d'Histoire naturelle Paris (2) **1**: 109–158, pls. 1–2.

SAUVAGE, H. E. (1880): Description des Gobioïdes nouveaux ou peu connus de la collection du Muséum d'histoire naturelle. – Bulletin de la Société philomathique de Paris (7) **4**: 40–58.

SAUVAGE, H. E. (1881): Description de quelques poissons d'espèces nouvelles de la collection du Muséum d'histoire naturelle. – Bulletin de la Société philomathique de Paris (7) **5**: 101–104.

SAUVAGE, H. E. (1883): Description de quelques poissons de la collection du Muséum d'histoire naturelle. – Bulletin de la Société philomatique de Paris (7) **7**: 156–161.

SAZONOV, YU. I. & IWAMOTO, T. (1992): Grenadiers (Pisces, Gadiformes) of the Nazca and Sala y Gomez Ridges, southeastern Pacific. – Proceedings of the California Academy of Sciences **48**: 27–93.

SAZONOV, YU. I., SHCHERBACHEV, YU. N. & IWAMOTO, T. (2003): The grenadier genus *Mataeocephalus* Berg, 1898 (Teleostei, Gadiformes, Macrouridae), with descriptions of two new species. – Proceedings of the California Academy of Sciences **54**: 279–301.

SCHULTZ, L. P., HERALD, E. S., LACHNER, E. A., WELANDER, A. D. & WOODS, L. P. (1953): Fishes of the Marshall and Marianas Islands. Vol. 1. Families Asymmetrontidae through Siganidae. – Bulletin of the United States national Museum **202**: XXXII + 685 pp., 74 pls.

SCHULTZ, L. P., WOODS, L. P. & LACHNER, E. A. (1966): Fishes of the Marshall and Marianas Islands. Vol. 3. Families from

Kraemeriidae through Antennariidae. – Bulletin of the United States National Museum **202**: I–VII + 1–176, pls. 124–148.

SCHWARZHANS, W. & MØLLER, P. R. (2007): Review of the Dinematichtyini (Teleostei, Bythitidae) of the Indo-West Pacific. Part III. *Beaglichthys*, *Brosmolus*, *Monothrix* and eight new genera with description of 20 new species. – The Beagle, Records of the Museums and Art Galleries of the Northern Territory **23**: 29–110.

SCHWARZHANS, W., MØLLER, P. R. & NIELSEN, J. G. (2005): Review of the Dinematichthyini (Teleostei: Bythitidae) of the Indo-West Pacific. Part I. *Diancistrus* and two new genera with 26 new species. – The Beagle, Records of the Museums and Art Galleries of the Northern Territory **21**: 73–163.

SENOU, H. (2001): Sphyraenidae Barracudas. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO Species Identification Guide for Fishery Purposes. The living marine resources of the Western Central Pacific. Vol. 6. Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles, sea turtles, sea snakes and marine mammals, pp. 3685–3697; Rome (FAO).

SÉRET, B. (1990): *Aulohalaelurus kanakorum* n. sp., a new species of catshark (Carcharhiniformes, Scyliorhinidae, Atelomycterinae) from New Caledonia. – Records of the Australian Museum **42**: 127–136.

SÉRET, B., BRISCHOUX, F., BONNET, X. & SHINE, R. (2008): First record of *Cirrimaxilla formosa* (Muraenidae) from New Caledonia, found in sea snake stomach contents. – Cybium **32**: 191–192.

SÉRET, B. & DINGERKUS, G. (1992): First record of the rare snake-eel *Lamnostoma kampeni* (Teleostei: Anguilliformes, Ophichthidae) from a river in northeastern New Caledonia. – Cybium **16**: 169–180.

SÉRET, B., GRANDPERRIN, R. & RIVATON, J. (1997): Poissons de profondeur et ressources halieutiques de la zone économique de la Nouvelle-Calédonie. – Cybium **21**, Supplément: 99–106.

SÉRET, B. & LAST, P. (2003): Description of four new stingarees of the genus *Urolophus* (Batoidea: Urolophidae) from the Coral Sea, South-west Pacific. – Cybium **27**: 307–320.

SÉRET, B. & LAST, P. R. (2008a): *Galeus priapus* sp. nov., a new species of sawtail catsharks (Carcharhiniformes: Scyliorhinidae) from New Caledonia. – Zootaxa **1813**: 19–28.

SÉRET, B. & LAST, P. R. (2008b): *Asymbolus galacticus* sp. nov., a new species of spotted catshark (Carcharhiniformes: Scyliorhinidae) from New Caledonia. – Cybium **32**: 137–143.

SÉRET, B. & LAST, P. R. (2009): *Notoraja sapphira* sp. n. (Rajoidei: Arhynchobatidae), a new deepwater skate from the slopes of the Norfolk Ridge (South-West Pacific). – Zootaxa **2153**: 24–34.

SHINOKAWA, T., AMAOKA, K., KAJIWARA, Y. & SUYAMA, S. (1995): Occurrence of *Thalassenchelys coheni* (Anguilliformes: Chlopsidae) in the West Pacific Ocean. – Japanese Journal of Ichthyology **42**: 89–92.

SMITH, D. G., BÖHLKE, J. E. & CASTLE, P. H. J. (1981): A revision of the nettastomiatid eel genera *Nettastoma* and *Nettenchelys* (Pisces: Anguilliformes), with descriptions of six new species. – Proceedings of the biological Society of Washington **94**: 535–560.

SMITH-VANIZ, W. F. (1976): The saber-toothed blennies, tribe Nemophini (Pisces: Blenniidae). – Monograph, Academy of Natural Sciences of Philadelphia **19**: VII + 196 pp., 18 unnumbered pls.

SMITH-VANIZ, W. F. (1999): Carangidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2659–2756; Rome (FAO).

SPRINGER, V. G. (1972): Additions to revisions of the blenniid fish genera *Ecsenius* and *Entomacrodus*, with descriptions of three new species of *Ecsenius*. – Smithsonian Contributions to Zoology **134**: 13 pp.

SPRINGER, V. G. (1988): The Indo-Pacific blenniid fish genus *Ecsenius*. – Smithsonian Contributions to Zoology **465**: IV + 134 pp., 14 pls.

SPRINGER, V. G. & FRICKE, R. (2000): Description of two new blenniid fish species: *Entomacrodus lemuria* from the western Indian Ocean and *E. williamsi* from the western Pacific Ocean. – Proceedings of the biological Society of Washington **113**: 386–396.

SPRINGER, V. G. & RANDALL, J. E. (1999): *Ecsenius polystictus*, new species of blenniid fish from Mentawai Islands, Indonesia, with notes on other species of *Ecsenius*. – Revue française d'Aquariologie **26**: 39–48.

SPRINGER, V. G. & SMITH-VANIZ, W. F. (1968): Systematics and distribution of the monotypic Indo-Pacific blenniid fish genus *Atrosalarias*. – Proceedings of the United States National Museum **124**: 1–12, pl. 1.

STARNES, W. C. (1999): Priacanthidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 4. Bony fishes part 2 (Mugilidae to Carangidae), pp. 2590–2601; Rome (FAO).

STEWART, A. L. & PIETSCH, T. W. (1998): The ceratioid anglerfishes (Lophiiformes: Ceratioidei) of New Zealand. – Journal of the Royal Society of New Zealand **28**: 1–37.

SULAK, K. J. & SHCHERBACHEV, YU. N. (1997): Zoogeography and systematics of six deep-living genera of synaphobranchid eels, with a key to taxa and description of two new species of *Ilyophis*. – Bulletin of marine Science **60**: 1158–1194.

TÅNING, A. V. (1932): Notes on scopelids from the Dana Expeditions. I. – Videnskabelige Meddelelser fra Dansk naturhistorisk Forening, Kjøbenhavn **94**: 125–146.

THOLLOT, P. (1996a): A list of fishes inhabiting mangroves from the south-west lagoon of New Caledonia. – Micronesica **29**: 1–19.

THOLLOT, P. (1996b): Les poissons de mangrove du lagon sud-ouest de Nouvelle-Calédonie, 321 pp.; Paris (O. R. S. T. O. M. Éditions).

THOLLOT, P. & KULBICKI, M. (1988): Overlap between the fish fauna inventories of coral reefs, soft bottoms and mangroves in Saint-Vincent Bay (New Caledonia). – Proceedings of the 6th international Coral Reef Symposium, Townsville, Australia, 8th–12th August 1988, **2**: 613–618.

THOMSON, J. M. (1954): The Mugilidae of Australia and adjacent seas. – Australian Journal of marine and Freshwater Research **5**: 70–131, pls. 1–2.

TIGHE, K. A. & MCCOSKER, J. E. (2003): Two new species of the genus *Chlopsis* (Teleostei: Anguilliformes: Chlopsidae) from the southwestern Pacific. – Zootaxa **236**: 1–8.

TORII, A., HAROLD, A. S., OZAWA, T. & IWATSUKI, Y. (2003): Redescription of *Bregmaceros macclellandi* Thompson, 1840 (Gadiformes: Bregmacerotidae). – Ichthyological Research **50**: 129–130.

TYLER, J. C. & LANGE, M. D. (1982): Redescription of the Indo-Australian filefish *Acreichthys radiatus* (Popta) (Monacanthidae, Tetraodontiformes). – American Museum Novitates **2727**: 14 pp.

WANG, C.-H. (1988): Seasonal changes of the distribution of South Pacific albacore based on Taiwan's tuna longline fisheries, 1971–1985. – Acta Oceanographica Taiwanica (National Taiwan University, Scientific Report) **20**: 13–40.

WANTIEZ, L. (1992): Importance of reef fishes among the soft bottom fish assemblages of the North Lagoon of New Caledonia. – Proceedings of the 7th international Coral Reef Symposium, Guam **2**: 942–950.

WANTIEZ, L. (1993): Les poissons des fonds meubles du Lagon Nord et de la Baie de Saint-Vincent de Nouvelle-Calédonie. Description des peuplements; structure et fonctionnement des communautés. – Ph. D. thesis, Université d'Aix-Marseille II, 444 pp.

WANTIEZ, L., FANINOZ, S., BOUILLERET, F. & GIL, O. (2010): Etat zéro des communautés biocénotiques avant la mise en place de zones de type I.B au sein de l'aire marine protégée de l'aire de Yambé-Diahoué, 65 p.; Nouméa (WWF-France and Université de la Nouvelle-Calédonie).

WANTIEZ, L., HARMELIN-VIVIEN, M. & KULBICKI, M. (1996): Spatial and temporal variation in a soft-bottom fish assemblage in St Vincent Bay, New Caledonia. – Marine Biology **125**: 801–812.

WANTIEZ, L. & KULBICKI, M. (1995): Main fish populations and their relation to the benthos in a silted bay of New Caledonia, as determined by visual censuses. – Cybium **19**: 223–240.

WANTIEZ, L., THOLLOT, P. & KULBICKI, M. (1997): Effects of marine reserves on coral reef fish communities from five islands in New Caledonia. – Coral Reefs **16**: 215–224.

WATSON, R. E., KEITH, P. & MARQUET, G. (2001): *Sicyopus (Smilosicyopus) chloe*, a new species of freshwater goby from New Caledonia (Sicydiinae). – Cybium **25**: 41–52.

WATSON, R. E., KEITH, P. & MARQUET, G. (2002): *Lentipes kaaea*, a new species of freshwater goby (Teleostei: Gobioidei: Sicydiinae) from New Caledonia. – Bulletin français de la Pêche et de la Pisciculture **364**: 173–185.

WATSON, R. E., KEITH, P. & MARQUET, G. (2005): *Stiphodon sapphirinus*, a new species of freshwater goby from New Caledonia (Gobiidae: Sicydiinae). – Cybium **29**: 339–345.

WATSON, R. E. & PÖLLABAUER, C. (1998): A new genus and species of freshwater goby from New Caledonia with a complete lateral line (Pisces: Teleostei: Gobioidei). – Senckenbergiana Biologica **77**: 147–153.

WEBER, M. & BEAUFORT, L. F. DE (1913): Über neue Fische von Neu-Kaledonien, gesammelt durch die Herren F. SARASIN und J. ROUX. – Zoologischer Anzeiger **42**: 172–174.

WEBER, M. & BEAUFORT, L. F. DE (1915): Les poissons d'eau douce de la Nouvelle-Calédonie. – In: SARASIN, F. & ROUX, J. (eds.): Nova Caledonia. Forschungen in Neu-Caledonien und auf den Loyalty-Inseln. Recherches scientifiques en Nouvelle-Calédonie et aux Îles Loyalty. A. Zoologie, 2, pp. 15–41; Wiesbaden (C. W. Kreidel).

WHITLEY, G. P. (1927): Studies in ichthyology. No. 1. – Records of the Australian Museum **15**: 289–304, pls. 24–25.

WHITLEY, G. P. (1951): Studies in ichthyology. No. 15. – Records of the Australian Museum **22**: 389–408.

WHITLEY, G. P. (1958): Descriptions and records of fishes. – Proceedings of the Royal zoological Society of New South Wales **1956–1957**: 28–51.

WHITLEY, G. P. (1959): More ichthyological snippets. – Proceedings of the Royal zoological Society of New South Wales **1957–1958**: 11–26.

WHITLEY, G. P. (1961): Fishes from New Caledonia. – Proceedings of the Royal zoological Society of New South Wales **1958–1959**: 60–65.

WHITLEY, G. P. (1964): Fishes from the Coral Sea and the Swain Reefs. – Records of the Australian Museum **26**: 145–195, pls. 8–10.

WHITLEY, G. P. (1970): [A new, dwarf species of *Hippocampus*]. – In: Abstract of proceedings. Ordinary general meeting, 26th November, 1969. Notes and exhibits. – Proceedings of the Linnean Society of New South Wales **94**: 294.

WILLIAMS, J. T. & MAUGÉ, L. A. (1984): *Cirripectes chelomatus*, a new species of salariine fish (Pisces, Blenniidae). – Bulletin du Muséum national d'Histoire naturelle, Paris (4) (A) **5**: 1139–1149.

WINTERBOTTOM, R. (1996): A new species of gobiid fish, *Trimma benjamini*, from the western Pacific. – Revue française d'Aquariologie **23**: 57–60.

WINTERBOTTOM, R. (2001): Two new gobiid fish species in *Trimma* and *Trimmatom* (Teleostei: Gobiidae) from the Indian and Western Pacific Oceans. – Aqua, Journal of Ichthyology and aquatic Biology **5**: 19–24.

WOODLAND, D. J. (2001): Gerreidae. – In: CARPENTER, K. E. & NIEM, V. H. (eds.): FAO species identification guide for fishery purposes. The living marine resources of the Western Central Pacific. Vol. 5. Bony fishes part 3 (Menidae to Pomacentridae), pp. 2946–2960; Rome (FAO).

YAN, C. Y. & KROENKE, L. W. (1993): A plate tectonic reconstruction of the Southwest Pacific, 0–100 Ma. – Proceedings of the Ocean Drilling Program, Scientific Results **130**: 697–709.

YATSU, A. (1995): Zoogeography of epipelagic fishes in the South Pacific Ocean and the Pacific sector of the Subantarctic, with special reference to the ecological role of the slender tuna, *Allothunnus fallai*. – Bulletin of the national Research Institute of Far Seas Fisheries **32**: 1–145.

ZAHURANEC, B. J. (2000): Zoogeography and systematics of the lanternfishes of the genus *Nannobrachium* (Myctophidae: Lampanyctini). – Smithsonian Contributions to Zoology **607**: III + 69 pp.

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Rehabilitation of *Sillago erythraea* Cuvier, and redescription of *Sillago sihama* (Forsskål) (Teleostei: Sillaginidae) from the Red Sea

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Abstract

The specific identity of the sillaginid fishes of the *Sillago sihama* complex in the Red Sea is examined. The species *Sillago sihama* is considered as restricted to the southern Red Sea. In the northern Red Sea (Gulf of Suez), and (through Lessepsian immigration) in the eastern Mediterranean Sea, another species in the complex is distinguished, *Sillago erythraea*. *Sillago sihama* and *S. erythraea* are redescribed. Populations in the *Sillago sihama*-group from other regions in the Indo-West Pacific differ in several characters, including the shape of the swimbladder and the scale patterns on the operculum. They probably belong to different species.

Keywords: Fishes, Red Sea, *Sillago*, Sillaginidae, redescription, rehabilitation.

Zusammenfassung

Die Identität des Artkomplexes *Sillago sihama* im Roten Meer wird untersucht. Die Art *Sillago sihama* ist auf das südliche Rote Meer beschränkt. Im nördlichen Roten Meer (Golf von Suez) und – im Zuge Lessepsischer Einwanderung – im östlichen Mittelmeer wird eine andere Art, *Sillago erythraea*, unterschieden. *Sillago sihama* und *S. erythraea* werden erneut beschrieben. Populationen der *Sillago sihama*-Gruppe aus anderen Regionen des Indo-Westpazifik unterscheiden sich in mehreren Merkmalen, unter anderem in der Form der Schwimmblase und der Beschuppung des Kiemendeckels. Sie gehören vermutlich zu einer oder mehreren anderen Arten.

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1 Introduction

The whiting (sillago) family Sillaginidae is a group of fishes living in marine and brackish waters of the Indo-West Pacific. They live on soft bottoms in coastal waters of the continental shelf. Most species are found at shallow depths, while a few occur down to 180 m.

Sillaginids are easily identified as a family by their elongate body, the long snout, and the long soft dorsal and anal fins, as well as the horizontally positioned preopercle. Most species are externally similar and can be distinguished mainly by the shape of the swimbladder, osteological characters, fin ray counts, and small differences in colouration.

The family Sillaginidae was revised by McKay (1985), who recognised three genera and 25 species. McKay & McCarthy (1989) described an additional species, *Sillago arabica*, from the Persian (Arabian) Gulf. In a catalogue of the Sillaginidae of the world, McKay (1992) raised some subspecies to species level and recognised three genera and 31 species. Kaga et al. (2010) described another species, *Sillago caudicula*, from Oman, bringing the total number of species in the family to 32.

During the examination of Red Sea material previously attributed to *Sillago sihama*, it became clear that more than one species was involved. The purpose of the present paper is to redescribe *Sillago sihama*, and to establish the specific identity of the other *Sillago* species found in the Red Sea and in the eastern Mediterranean Sea (as a Lessepsian immigrant).

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2 Methods and Materials

Methods follow McKay (1985: 2–3). In descriptive sections, the data of holotypes or lectotypes are given in parentheses. The genus and species classification follows Eschmeyer & Fricke (2010), unless otherwise noted. The museum abbreviations follow Fricke & Eschmeyer (2010).

Abbreviations of museum collections

HUJF Hebrew University, Fish Collection, Jerusalem, Israel
MNHN Muséum National d'Histoire Naturelle, Paris, France
SMF Senckenberg Forschungsinstitut und Naturmuseum, Abteilung Marine Zoologie, Frankfurt am Main, Germany
ZMUC Københavns Universitet, Zoologisk Museum, Copenhagen, Denmark

3 Species accounts

Sillago erythraea Cuvier in Cuvier & Valenciennes, 1829 (Figs. 1, 2, 5, 8, 10)

Sillago erythraea Cuvier in Cuvier & Valenciennes 1829: Cuvier in Cuvier & Valenciennes 1829: 409–411 (part, Gulf of Suez).

Material

Type material: MNHN A-3127 (163 mm SL), lectotype of *Sillago erythraea* Cuvier in Cuvier & Valenciennes, 1829 [as designated below, see chapter 4], Suez, Egypt, Gulf of Suez, Red Sea, leg. E. Geoffroy Saint-Hilaire, ca. 1799–1801.

Additional material: Gulf of Suez, northern Red Sea, Egypt: HUJF 7134 (1 specimen, 137 mm SL), Abu Zanima, Fish Collection team, 22 Sep. 1967; HUJF 7135 (1 specimen, 144 mm SL), Abu Zanima, Fish Collection team, 30 Apr. 1970. – Mediterranean Sea, Israel: HUJF 8552 (2 specimens, 116–120 mm SL), Haifa, J. H. Fischthal, 27 June 1977; HUJF 10579 (16 specimens, 145–160 mm SL), Haifa, A. Ben-Tuvia, 27 May 1989; HUJF 10860 (2 specimens, 144–185 mm SL), Haifa, A. Ben-Tuvia, 18 May 1982; HUJF 10898 (1 specimen, 158 mm SL), Acre, A. Ben-Tuvia, 11 Aug. 1982; HUJF 10899 (3 specimens, 146–172 mm SL), Haifa, A. Ben-Tuvia, 14 Jan. 1982; HUJF 10962 (5 specimens, 110–140 mm SL), Jaffa, D. Golani, May 1980; HUJF 12360 (2 specimens, 168–172 mm SL), Acre, D. Golani, 8 May 1987; HUJF 13933 (6 specimens, 131–142 mm SL), Jaffa, D. Golani, 18 Oct. 1989; HUJF 19740 (40 specimens, 115–170 mm SL), Haifa, D. Golani, 3 Apr. 2008.

Description

First dorsal fin X–XII (XI); second dorsal fin I, 19–22 (I, 21). Anal fin II, 18–22 (?, 22). Pectoral fin 14–16 (15). Lateral line scales 63–74. Vertebrae 12 (12) [abdominal] + 3 (3) [modified] + 17 (17) [caudal], total 32 (32). Gill rakers relatively large, 3–4 + 8–10 (4 + 9), uppermost raker on upper and lower arch rudimentary. Measurements of the lectotype see Tab. 1.

Upper jaw with a series of very small teeth which are slightly recurved. Anterior teeth slightly larger, posterior teeth gradually smaller. The teeth are similar in the lower jaw, however, there is a narrow gap at the symphysis. Vomer covered with small teeth, similar to those in the jaws. Preoperculum smooth, completely scaleless; operculum with a few scales in the upper part. Nostrils situated at the level of the upper quarter of the orbit; first nostril with a small flap, second nostril (which is situated close to the first) nearly round.

Tab. 1. Measurements of the lectotype of *Sillago erythraea* Cuvier in Cuvier & Valenciennes, 1829, MNHN A-3127.

Measurements	Value [mm]
Standard length	163
Total length	189+
Head length	50.4
Predorsal fin length	61.8
Preanal fin length	98.1
Body depth at origin of first dorsal fin	28.4
Preorbital length	19.2
Upper jaw length	9.0
Orbit diameter	10.9
Interorbital distance	9.8
Caudal peduncle length	16.1
Caudal peduncle depth (minimum)	10.6
First dorsal fin base length	32.4
Second dorsal fin base length	53.1
Anal fin base length	49.6
Pectoral fin length	26.5
Pelvic fin length	25.0

Swimbladder (Fig. 10) with two posterior extensions, two anterior extensions extending forward and diverging to terminate on each side of the basioccipital above the auditory capsule; two lateral extensions commence anteriorly, each sending a blind tubule anterolaterally and then extending along the abdominal wall below the investing peritoneum to just posterior of the duct-like process; two posterior tapering extensions of the swimbladder projecting into the caudal region, both equal in length; the lateral extensions not convoluted, without blind tubules.

Colouration: Body dorsally silvery yellow-brown, silvery white below; a midlateral, silvery, longitudinal stripe usually present; upper part of eye with a reddish brown blotch; dorsal fins dusky terminally with or without rows of dark brown spots on the second dorsal-fin membrane; caudal fin with a faint dark brown blotch each on the dorsal and ventral lobes, fin often terminally dusky; no dark blotch at the base of the pectoral fin; other fins hyaline, pelvic and anal fins whitish.

Distribution

Northern Red Sea (Gulf of Suez, Egypt). Lessepsian immigrant through the Suez Canal into southeastern Mediterranean Sea including the southeastern Aegean Sea (Egypt, Israel, Turkey).

Comparison

This species differs from *Sillago sihama* in the absence of scales on the preoperculum and on most of the operculum (completely scaled in *S. sihama*), in the total

number of vertebrae (32 in *S. erythraea*, 34 in *S. sihama*), in the shape of the swimbladder with the lateral extensions each spreading a blind tubule anterolaterally (tubule missing in *S. sihama*), and the position of the nostril tending to be lower than in *S. sihama*.

Remarks

The lectotype of *Sillago erythraea* Cuvier in Cuvier & Valenciennes, 1829 is partly damaged. Scales along the sides of the body are missing, so that the lateral line cannot be counted. Internal organs are missing. The first dorsal fin is abrased and nearly completely missing, but the bases of the spines are still present and can be counted. The second dorsal fin is also nearly completely missing (but fin ray bases are still present), except for the first three and the last two rays which are complete. The anal fin spines are damaged by an extended slit through the belly, but the remainder of the rays are complete (except for a few damaged rays).

McKay's (1992: 59) illustration of a swimbladder of a Red Sea specimen is probably based on Mediterranean material of *Sillago erythraea*. The unequal length of the posterior extensions of the swimbladder in that illustration is probably erroneous, as all specimens examined were found to have extensions of equal length.

Sillago sihama (Forsskål in Niebuhr, 1775) (Figs. 3, 4, 6, 9, 11)

Atherina sihama Forsskål in Niebuhr, 1775: Forsskål in Niebuhr 1775: XIII, 70 (Lohajae/Al-Luhayya, Yemen). Bonnaterre 1788: 78–79. Gmelin 1789: 1396. Lacepède 1803: 371, 373.
Sillago Sihama: Rüppell 1828: 9–11, pl. 3, fig. 1 (part, Red Sea).
Sillago erythraea Cuvier in Cuvier & Valenciennes, 1829: Cuvier in Cuvier & Valenciennes 1829: 409–411 (part, Massawa, Eritrea; Red Sea [Rüppell material]).

Material

Type material: ZMUC P.45164 (dry skin), holotype of *Atherina sihama* Forsskål in Niebuhr, 1775, "Lohajæ" (Al-Luhayya/Yemen), P. S. Forsskål, Dec. 1762–Jan. 1763. – MNHN A-3137 (138 mm SL), paralectotype of *Sillago erythraea* Cuvier in Cuvier & Valenciennes, 1829, Massawa, Eritrea, Red Sea, W. Hemprich & C. Ehrenberg, ca. Nov. 1824–May 1825 (data see Klausewitz 2002: 10). – SMF 324 (4 paralectotypes of *S. erythraea*), Red Sea, E. Rüppell, ca. 1826–1827 (data see Klausewitz 2002: 10).

Additional material: HUJF 18150 (1 specimen, 163 mm SL), Zula Bay, Dahlak Archipelago, Eritrea, A. Ben-Tuvia, 23 Mar. 1962; HUJF 19716 (4 specimens, 173–184 mm SL), Eritrea, D. Golani, Feb. 2005.

Description

First dorsal fin XI (XI); second dorsal fin I, 20–21 (I, ca. 21) [second dorsal fin of holotype damaged, count uncertain]. Anal fin II, 21–23 (II, 22). Pectoral fin 14–15 (ca. 15) [anal fin of holotype damaged, count uncertain]. Lateral line scales 70–74 (ca. 71) [lateral line scales of holotype partially missing, count based on scale pockets]. Vertebrae 14 [abdominal] + 2–8 [modified] + 12–18 [caudal], total 34. Gill rakers 4 + 9.

Upper jaw with a series of large teeth which are slightly recurved. Anterior teeth slightly larger, posterior teeth gradually smaller. The teeth are similar in the lower jaw, however, there is a gap at the symphysis. Vomer covered with small, similar teeth. Both preoperculum and operculum completely covered with scales. Nostrils situated at the level of the upper quarter of the orbit, often closer to the upper margin of the orbit or even above; first nostril with a small flap, second nostril (which is situated close to the first) nearly round.

Swimbladder (Fig. 11) with two posterior extensions, two anterior extensions extending forward and diverging to terminate on each side of the basioccipital above the auditory capsule; two lateral extensions commence anteriorly, extending along the abdominal wall below the investing peritoneum to just posterior of the duct-like process, but without anterolateral blind tubules; two posterior tapering extensions of the swimbladder projecting into the caudal region, both equal in length; lateral extensions not convoluted, without blind tubules.

Colouration: Fresh colouration according to Rüppell (1828: pl. 3, fig. 1): Body dorsally silvery yellow-brown, silvery white below; eye dorsally reddish brown; a midlateral, reddish brown, longitudinal stripe present, bordered by silver lines; first dorsal fin yellowish olive green, second dorsal and anal fins brown; caudal fin terminally dusky; no dark blotch at the base of the pectoral fin; other fins hyaline, the pelvic fins whitish. Preserved colouration similar to *S. erythraea*.

Distribution

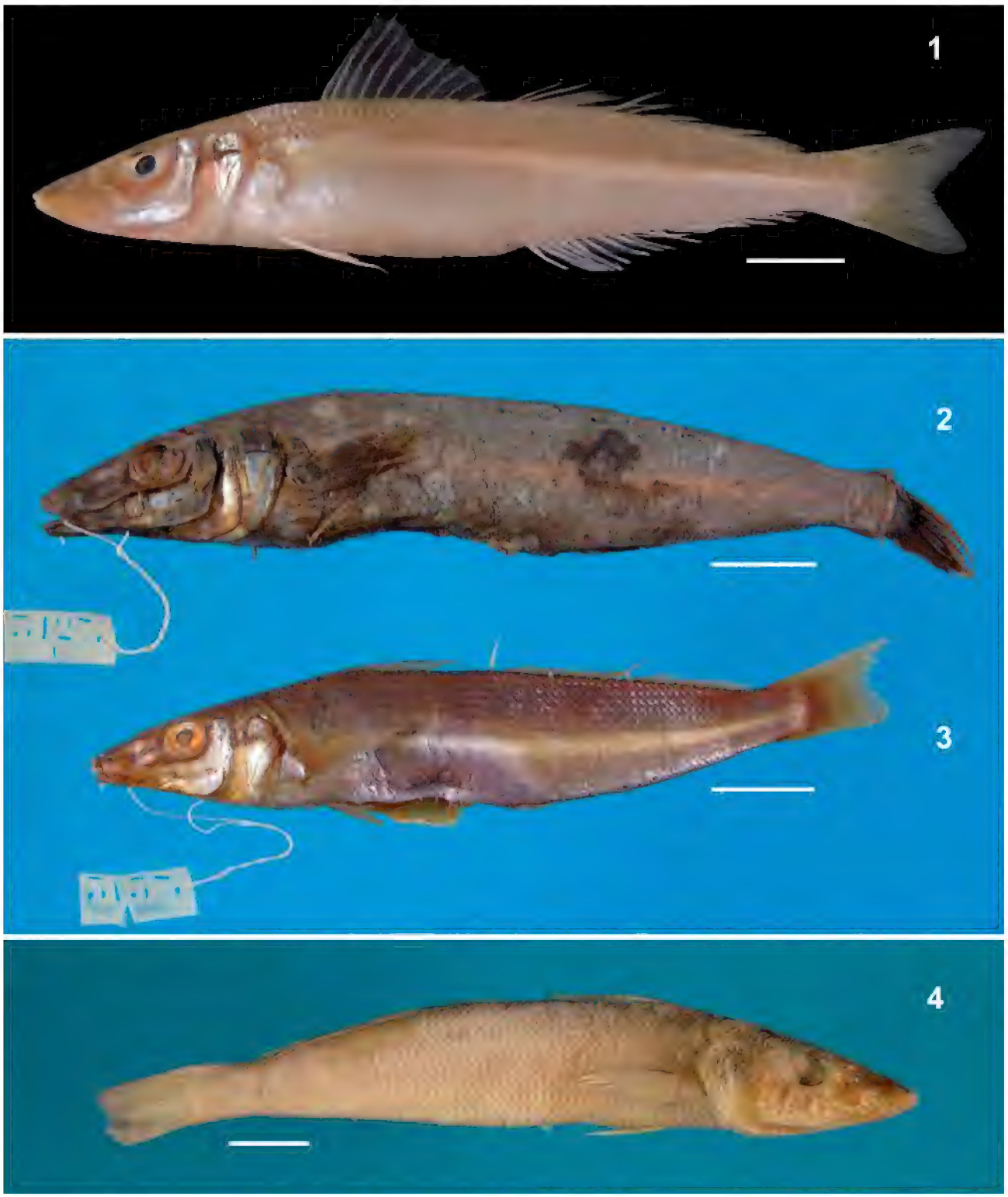
Southern Red Sea (Eritrea; Yemen).

Remarks

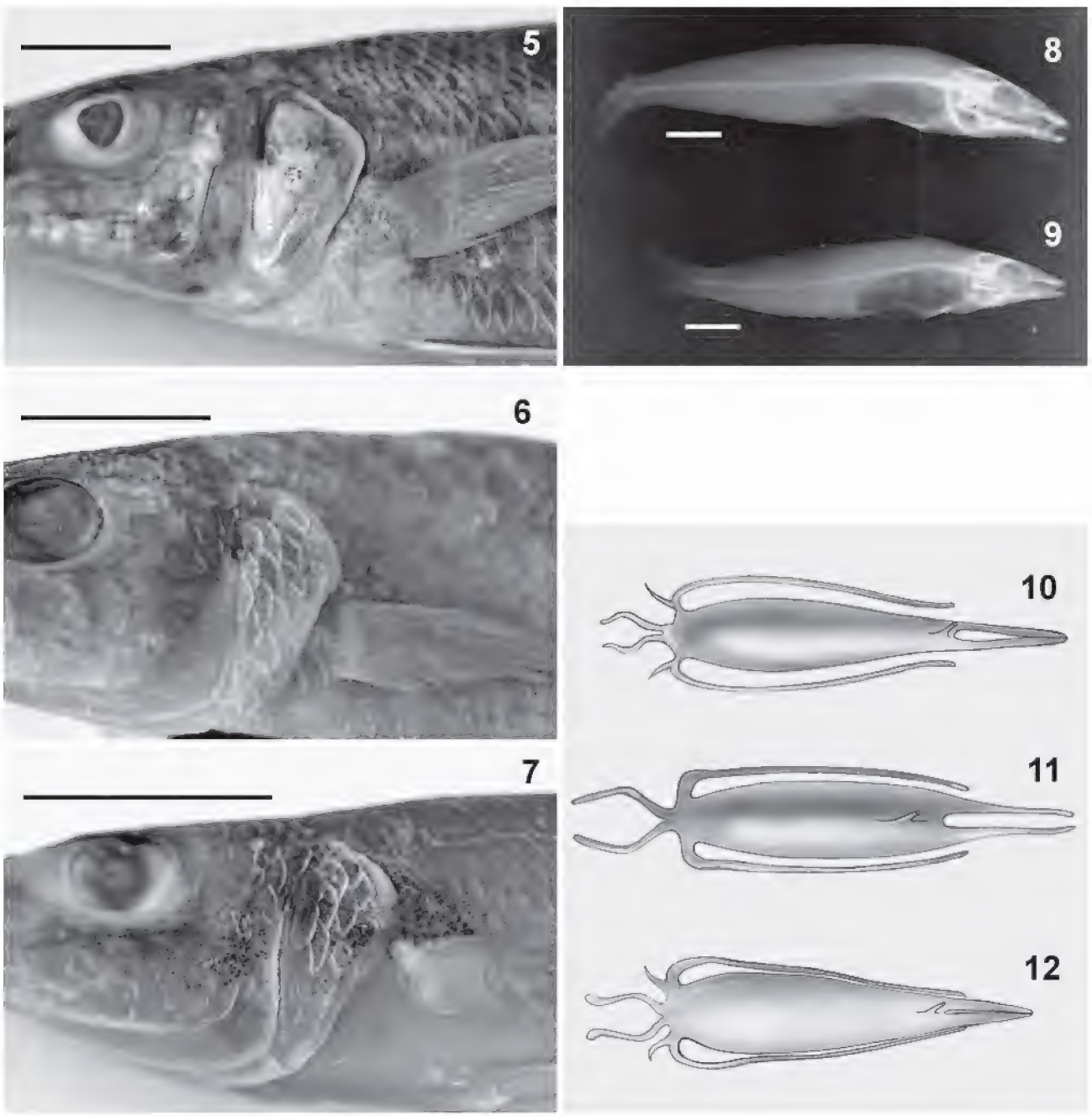
For the time being, we consider *Sillago sihama* to be restricted to the southern Red Sea. Populations from other regions which were previously assigned to this species differ in several characters, including the shape of the swimbladder (see Fig. 12) and the operculum (see Fig. 7); see discussion below. They probably belong to different species.

4 Discussion

Sillago sihama was first described as *Atherina sihama* as sp. no. 102 by Forsskål in Niebuhr (1775: XIII, 70). The name was probably authored by Fabricius [ex Forsskål] (discussion see Fricke 2008: 31), and based on a single



Figs. 1–4. *Sillago* spp. – **1**. *S. erythraea*, Suez, Gulf of Suez, Red Sea (photograph taken by SERGEY BOGORODSKY). **2**. *S. erythraea*, lectotype (MNHN A-3127). **3**. *S. sihama*, paralectotype of *S. erythraea* (MNHN A-3137). **4**. *S. sihama*, Eritrea, southern Red Sea (HUJF 19716). – Scales: 2 cm.



Figs. 5–12. *Sillago* spp. – Operculum (5–7), x-ray (8, 9), and swimbladder (10–12). – 5. *S. erythraea*, Mediterranean Sea (HUJF 10860). 6. *S. sihama*, Eritrea, southern Red Sea (HUJF 19716). 7. *S.* sp. cf. *sihama*, Hong Kong (HUJF 19497). 8. *S. erythraea*, lectotype (MNHN A-3127) 9. *S. sihama*, paralectotype of *S. erythraea* (MNHN A-3137). 10. *S. erythraea*, Mediterranean Sea. 11. *S. sihama*, Eritrea. 12. *S.* sp. (aff. *sihama*), Hong Kong. – Scales: 2 cm.

holotype (ZMUC P.45164, a dry skin). While the holotype agrees with the present usage of *Sillago sihama* (Forsskål in Niebuhr, 1775), the description at least in part may have been based on a different species; it referred in the colour description to the opercle which was anteriorly and posteriorly each bearing a series of green ocelli. We here consider *Sillago sihama* as defined by the above mentioned ZMUC holotype.

Bonnaterre (1788: 178–179) was the first author to treat this species as valid. Bloch & Schneider (1801: 60) cited Forsskål in Niebuhr's description and placed the species in the genus *Platycephalus*. Rüppell (1828: 9–11, pl. 3, fig. 1) described and illustrated the species '*Sillago Sihama*' based on material from the Red Sea ("überall im Rothen Meere"). Rüppell discussed the synonymy of the species; he followed a broad concept of the species and even synonymised *Sillago acuta* Cuvier in Cuvier & Valenciennes, 1829 (Cuvier in Cuvier & Valenciennes 1829: 400–409), *Sciaena malabarica* Bloch & Schneider, 1801 (Bloch & Schneider 1801: pl. 19) and the 'Soring' of Russell (1803: pl. 113) from India. Rüppell (1828: 11) also refered to an entry of '*Atherina sihama*' in the manuscript catalogue by Ehrenberg (based on MNHN A-3137 from Eritrea). In his description, Rüppell (1828: 10) mentioned that the operculum is covered with scales (this character is also shown on his pl. 3, fig. 1), so that his record is apparently in part based on the true *Sillago sihama*.

Cuvier in Cuvier & Valenciennes (1829: 409–411) discussed the history of usage of the name. He assumed that *Sillago sihama* of Rüppell differed from the *Atherina sihama* of Forsskål in Niebuhr (1775) (which they doubted to belong to the genus *Sillago* at all) in the above mentioned colouration details, and established the new name *Sillago erythraea* for Red Sea specimens of *Sillago*, based on six syntypes [MNHN A-3127 (1 specimen) from Suez, Egypt; MNHN A-3137 (1 specimen) from Massawa, Eritrea; SMF 324 (4 specimens), the specimens described and illustrated by Rüppell (1828: pl. 3, fig. 1)].

Cuvier in Cuvier & Valenciennes (1829: 409–411) did not provide a very detailed description of the colour pattern of his *Sillago erythraea*. He only had alcohol preserved specimens available, which already had been 28–30 years in preservative (the Suez syntype), or 4–8 years, respectively (the Massawa syntype). The extant MNHN syntypes of *Sillago erythraea* Cuvier in Cuvier & Valenciennes 1829 were re-examined and found to belong to two different species. While the Massawa specimen well agreed with the *Sillago sihama* of current usage, the Suez specimen was found to represent a separate species. In order to provide a name for the latter species, and to stabilise the usage of the name *Sillago erythraea* Cuvier in Cuvier & Valenciennes, 1829, the specimen MNHN A-3127 (Fig. 2) from Suez is hereby designated as the lectotype of *Sillago erythraea*. This species, which recently immigrated into the eastern Mediterranean Sea through the Suez Canal, is here treated as valid, and redescribed above.

A study of the mitochondrial cytochrome c oxidase, subunit 1 gene (COX 1) of the Mediterranean Sea, Gulf of Suez (northern Red Sea) and southern Red Sea specimens, confirms that northern Red Sea and Mediterranean populations belong to the same species which has diverged significantly on a specific level from southern Red Sea populations (Tikochinski et al. in prep.).

Griffith & Smith (1834: pl. 2 [opposite p. 122], fig. 1) published a drawing misspelled "*Sillago erytheræa*" without any description. Though the drawing was probably based on the Massawa syntype (MNHN A-3137), the colouration is completely incorrect in showing a green colouration of the back, a red and blue eye, and brown streaks on the snout and below the eye. Günther (1860: 243–244) was the first author to synonymise *Sillago erythraea* with *Sillago sihama*, without comment. Subsequent authors, including McKay (1992: 59), followed his decision.

In the Indo-West Pacific, additional, undescribed species are apparently included in the *Sillago sihama* complex (operculum of a Hong Kong specimen see Fig. 7, swimbladder see Fig. 12). The typical pattern of the swimbladder described and illustrated by McKay (1992: 59) based on Queensland (Australia) specimens, with the posterior extensions of unequal length and the lateral extensions convoluted and with blind tubules along their length, completely differs from southern Red Sea material of *Sillago sihama*; in addition, several counts are different as well. For the time being, the distribution of *S. sihama* is therefore restricted to the southern Red Sea; Indo-West Pacific materials of the *S. sihama* complex are in need of revision.

5 References

Bloch, M. E. & Schneider, J. G. (1801): M. E. Blochii, doctoris medicinae Berolinensis, et Societatibus Literatiis multis adscripti, systema ichthyologiae iconibus cx illustratum. Post obitum auctoris opus inchoatum absolvit, correxit, interpolavit Jo. Gottlob Schneider, Saxo, LX + 584 pp., 110 pls.; Berolini [Berlin] (Sander).

Bonnaterre, [J. P.] (1788): Tableau encyclopédique et méthodique des trois règnes de la nature, dédie et présenté à M. Necker, Ministre d'Etat, & Directeur Général des Finances. Ichthyologie, LVI + 215 pp., pls. 1–100 + A–B; Paris (Panckoucke).

Cuvier, [G. L. C. F. D.] & Valenciennes, A. (1829): Histoire naturelle des poissons. Tome troisième. Suite du Livre troisième. Des percoïdes à dorsale unique à sept rayons branchiaux et à dents en velours ou en cardes, XXVIII + 2 + 500 pp., pls. 41–71; Paris (F. G. Levrault) [author Cuvier].

Eschmeyer, W. N. & Fricke, R. (eds.) (2010): Catalog of fishes, electronic version (15 January 2010). – Internet publication, San Francisco (California Academy of Sciences). http://research.calacademy.org/research/Ichthyology/Catalog/fishcatmain.asp.

FRICKE, R. (2008): Authorship, availability and validity of fish names described by PETER (PEHR) SIMON FORSSKÅL and JOHANN CHRISTIAN FABRICIUS in the 'Descriptiones animalium' by CARSTEN NIEBUHR in 1775 (Pisces). – Stuttgarter Beiträge zur Naturkunde A, Neue Serie **1**: 1–76.

FRICKE, R. & ESCHMEYER, W. N. (2010): A guide to fish collections in the Catalog of fishes. Online version, updated 15 January 2010. – Internet publication, San Francisco (California Academy of Sciences). http://research.calacademy.org/research/Ichthyology/Catalog/collections.asp.

GMELIN, J. F. (1789): Caroli a Linné Systema Naturae per regna tria naturae, secundum classes, ordines, genera, species; cum characteribus, differentiis, synonymis, locis. Editio decimo tertia, aucta, reformata, vol. 1, pars III, pp. 1033–1516; Lipsiae [Leipzig] (Beer).

GRIFFITH, E. & SMITH, C. H. (1834): The class Pisces arranged by the Baron CUVIER, with supplementary additions, by EDWARD GRIFFITH, F. R. S., &c. and Lieut.-Col. CHARLES HAMILTON SMITH, C. H., K. W., F. R., L. S. S., &c. &c., 680 pp., 62 + 3 pls.; London (Whittaker) [English treatment of CUVIER's (1829) "Règne Animal"; supplements by GRIFFITH & SMITH; authorship variously cited].

GÜNTHER, A. [C. L. G.] (1860): Catalogue of the acanthopterygian fishes in the collection of the British Museum. Volume second. Squamipinnes, Cirrhitidae, Triglidae, Trachinidae, Sciænidae, Polynemidae, Sphyrænidae, Trichiuridae, Scombridae, Carangidae, Xiphiidae, XXI + 548 pp.; London (British Museum).

KAGA, T., IMAMURA, H. & NAKAYA, K. (2010): A new sand whiting, *Sillago (Sillago) caudicula*, from Oman, the Indian Ocean (Perciformes: Sillaginidae). – Ichthyological Research **57**: 367–372.

KLAUSEWITZ, W. (2002): Frankfurt versus Berlin: The Red Sea explorers WILHELM HEMPRICH, CHRISTIAN EHRENBERG and EDUARD RÜPPELL. – Zoology of the Middle East **27**: 7–12.

LACEPÈDE, B. G. E. (1803): Histoire naturelle des poissons, vol. **5**, XLVIII + 803 pp.; Paris (Plassan) [publication date see ROUX 1973: 33–35].

MCKAY, R. J. (1985): A revision of the fishes of the family Sillaginidae. – Memoirs of the Queensland Museum **22**: 1–73.

MCKAY, R. J. (1992): Sillaginid fishes of the world. (Family Sillaginidae). An annotated and illustrated catalogue of the sillago, smelt or Indo-Pacific whiting species known to date. – FAO Species Catalogue. FAO (Food and Agriculture Organization of the United Nations) Fisheries Synopsis **125** (14): IV + 87 pp.

MCKAY, R. J. & MCCARTHY, L. J. (1989): A revision of the sillaginid fishes of the Arabian Gulf with a description of *Sillago arabica* new species. – Memoirs of the Queensland Museum **27**: 551–553.

NIEBUHR, C. (1775): Descriptiones animalium avium, amphibiorum, piscium, insectorum, vermium; quae in itinere orientali observavit PETRUS FORSKÅL. Prof. Haun. Post mortem auctoris editit CARSTEN NIEBUHR. Adjuncta est material medica Kahirina atque tabula maris rubric geographica, 20 + XXXIV + 164 pp., 1 map; Hauniae [Copenhagen] (Möller).

ROUX, C. (1973): Les dates pour 'L'Histoire naturelle des Poissons' de LACEPÈDE. – Bulletin de Liaison des Musées d'Histoire naturelle **14**: 33–35.

RÜPPELL, [W. P.] E. [S.] (1828–1830): Atlas zu der Reise im nördlichen Afrika. Fische des Rothen Meers, 141 + 3 pp., 35 pls.; Frankfurt/Main (HEINR[ICH] LUDW[IG] BRÖNNER) [dates of publication: part 1 (1828): 1–26, pls. 1–6; part 2 (1829): 27–94, pls. 7–24; part 3 (1830): 95–141, pls. 25–35].

RUSSELL, P. (1803): Descriptions and figures of two hundred fishes; collected at Vizagapatam on the coast of Coromandel. 2 vols.: vol. 1, pp. I–VII + 1–78 + 4 unnumbered pp., pls. 1–100; vol. 2, 85 pp. + 4 unnumbered pp., pls. 101–208; London (W. Bulmer & Co.).

TIKOCHINSKI, Y., SHAININ, I., HYAMS, Y., MOTRO, U. & GOLANI, D. (in prep.): Genetic evidence for cryptic species in the whiting, *Sillago sihama*, and insights on its colonization of the Mediterranean Sea.

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